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The Emu

A Quarterly Magazine to popularize the Study and Protection
of Native Birds.

Official Organ of the ROYAL AUSTRALASIAN ORNITHOLOGISTS' UNION.



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230537
National Museum

Editors { A. J. CAMPBELL, Col. Mem. B.O.U.
CHARLES BARRETT.

VOL. XIII.—1913-14.

Melbourne :

WALKER, MAY & CO., PRINTERS, 25 MACKILLOP STREET.

EUROPEAN AGENTS :

WITHERBY & CO., 326 HIGH HOLBORN, LONDON.

1914.

EXHIBIT

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CONTENTS OF VOL. XIII.—1913-14.

- About Members, 104, 227.
 Acanthiza, The, of Flinders Island, 58.
Amytornis woodwardi in the Northern Territory, Search for, 188.
Austral Avian Record, The, 53.
 "Australian Nature Stories for Children," 218.
Avium paradiseum, 196.
 Bird-Life of Kow Plains (Victoria), 33.
 Bird-Life on White Island (N.Z.), 86.
 Bird Observers' Club, 59.
 Birds and Sheep-Flies, 233.
 Birds of Melville Island, 219.
 Birds of Moora (W.A.) and District, 75.
 Birds of Peel Island, 93.
 Birds of the Brunette Downs (N.T.), 205.
 Black-eared Cuckoo (*Mesocalius palliolatus*), 80.
 Bower-Bird, Regent (*Sericulus chrysocephalus*, Lewin), 101.
 Brunette Downs, Birds of the, 205.
 Brush-Turkeys in England, 101.
 Butcher-Birds' Eggs, Double Clutch of, 194.
 Cassowary, Early History of the Australian, 51.
 Charcoal in Finches' Nests, 100, 195.
 "Check-list," American View of the R.A.O.U., 97.
 "Check-list," R.A.O.U., 56, 102, 190, 193.
 Cockatoos, White, 101.
Colluricincla woodwardi, Search for Eggs of, 210.
 Commonwealth Collection, A, 65.
 Correction, A, 195.
 Correspondence, 55, 102, 193, 227.
 Crane, Notes on the Spotless (*Porzana immaculata*), 198, 202.
 Cuckoo, Black-eared (*Mesocalius palliolatus*, Lath.), 80.
 Description of a New Parrot, 105.
 Description of a New Sericornis, 74.
 Descriptions of New Eggs, 48.
 Descriptions of two New Eggs, 186.
 Eagles, 214.
 Editorial Change, 233.
 Eggs? Do Variations in Seasons Affect the Size of, 48.
 Field Notes on Some *Rallina*, 45.
 Field Notes on the Spotless Crane (*Porzana immaculata*), 197.
 Field Ornithology in South Australia, 17.
 From Magazines, &c., 51, 102, 218.
 Game, Keeping Native, 234.
 Gosford Scrubs, A Visit to the, 212.
 Ground-Parrot, Notes on the Western, 202.
 Gymnorhina, spp., The Eggs of, 15.
 Honey-eater, New Sub-species of, 187.
 Honours for Members of the R.A.O.U., 63.
 Kingfisher? Is there a Scarlet-breasted, 59.
 Kow Plains (Victoria), Bird-Life of, 33.
Leipoa ocellata—Successful Breeding in Captivity, 217.
 Magpie a Songster? Is the Australian, 55, 103.
 Mathews' Latest List, 233.
 Melville Island, Birds of, 219.
 Members, Hon. Associate, 233.
 Mock-Latin Names, 63.
 Montebello Islands, 102.
 "Nests and Eggs of Birds Found Breeding in Australia and New Zealand," 54.
 New Journal, A, 219.
 North Queensland Birds, 227.
 Notes and Notices, 63.
 Notes on Some North Queensland Birds, 132.
 Notes on the Spotless Crane and Western Ground-Parrot, 202.
 Obituary Notices, 59, 104, 228.
 Osteology of the Red Wattle-Bird (*Anthochaera carunculata*), 1.
 Owl, Boobook, and Frogmouth, 215.
 Owllet-Nightjar Nestlings, 216.
 Parrot, Description of New, 105.
 Parrot, New, for Australia, and Description of Eggs, 187.
 Passenger Pigeon, The, 51.
 Peel Island, The Birds of, 93.
 Penguins of the Antarctic, 220.
 Publications Received, 235.
Rallina, Field Notes on Some, 45.
 Regent Bower-Bird (*Sericulus chrysocephalus*, Lewin), 101.
 Reviews—"Nests and Eggs of Birds Found Breeding in Australia and New Zealand," 54; "Indian Pigeons and Doves," 225; "Colour Standards and Colour Nomenclature," 226.
Rhipidura tricolor, Freak Colours of, 195.
 Royal Australasian Ornithologists' Union, Adelaide Session, 108; Annual Report, 111; Balance-sheet, 112; President's Address, 114; The River Excursion, 118; Birds Identified, Lower Murray Excursion, 122; Overland Excursion, 129.

Search for Eggs of <i>Colluricincla woodwardi</i> , 210.	Swamp Birds, Some, 82.
Sericornis, Description of a New, 74.	Swifts, Great Flight of, 48.
Size of Eggs? Do Variations in Seasons Affect the, 48.	"The Birds of Australia," 99.
South Australia, Field Ornithology in, 17.	Torilla Plains, Visit to, 90.
South Australian Ornithological Association, 61.	Visit, A, to the Gosford Scrubs, 212.
Springfield (Tasmania) Notes, 49.	Wattle-Bird (<i>Anthochaera carunculata</i>), On the Osteology of the Red, 1.
Stray Feathers, 49, 100, 194, 214.	Western Australian Session, 233.
	White Island (N.Z.), Bird-Life on, 86.
	Wild Life Preservation Society of Australia, The, 64.

ILLUSTRATIONS IN VOL. XIII.

Osteology of the Red Wattle-Bird	plates i-iv
Sketch Map of South Australia	page 17
Blue-bush (<i>Kochia sedifolia</i>)	page 19
Eggs of <i>Gymnorhina tibicen</i> , Latham (coloured)	plate v
Gawler Ranges, Typical Scene : Through Fields of Flowers	plate vi
Nest and Eggs of Southern Frogmouth (<i>Podargus rossi</i> , Mathews)	plate vii
Nest and Eggs of Orange-fronted Bush-Chat (<i>Ephthianura aurifrons</i>) ; Nest (<i>in situ</i>) of Rufous-rumped Ground-Wren (<i>Hyacola cauta</i>)	plate viii
Nest of Striped Honey-eater (<i>Plectorhyncha lanceolata</i>)	plate ix
Nest and Eggs of Yellow-plumed Honey-eater (<i>Ptilotis ornata</i>) ; Nest and Eggs of White-fronted Honey-eater (<i>Glyciphila albifrons</i>)	plate x
Eggs of <i>Mesocalius palliolatus</i> ; Eggs of <i>Chthonicola sagittata</i>	page 81
Nest of Red-billed Gull (<i>Larus scopulinus</i>)	page 90
Australian Eggs in Mr. H. L. White's Collection (coloured)	plates xi-xiii
Mr. Robert Hall, C.M.B.O.U., &c. (Seventh President Royal Australasian Ornithologists' Union)	plate xiv
River Murray, showing typical fringe of Red Gums (Eucalypts) and Steamer <i>Arcadia</i>	plate xv
River Murray and Cockatoo Cliffs	plate xvi
Young White Cockatoo at Entrance of Nesting Burrow	page 125
Home of the Spotless Crake, Springfield, Tasmania	plate xvii
Nest of Spotless Crake (<i>Porzana immaculata</i>)	plate xviii
Haunt of Spotless Crake ; also Haunt of <i>Stipiturus</i> and <i>Sphenura</i>	plate xix
Nest of Spotless Crake (<i>Porzana immaculata</i>) <i>in situ</i>	plate xx
Nesting Site of Western Ground-Parrot (<i>Pezoporus flaviventris</i>)	plate xxi
P. L. Sclater	plate xxii
Nesting Place (opened) and Young of Owlet-Nightjar (<i>Egotheles novae-hollandiae</i>)	page 217

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WITHERBY & CO., 326 HIGH HOLBORN, LONDON.

1913.

CONTENTS - JULY. 1913.

(The author of each article is responsible for the facts recorded therein, and any deductions he may draw.)

	PAGE
ON THE OSTEOLOGY OF THE RED WATTLE-BIRD (<i>Anthochaera carunculata</i>). By R. W. Shufeldt, M.D., Hon. Mem. R.A.O.U., Washington, D.C.	1
THE EGGS OF GYMNORHINA, SPP. By A. F. Basset Hull, R.A.O.U., Sydney	15
FIELD ORNITHOLOGY IN SOUTH AUSTRALIA. By (Capt.) S. A. White, M.B.O.U., R.A.O.U., Adelaide	16
BIRD-LIFE OF KOW PLAINS. By L. G. Chandler, R.A.O.U., Melbourne	33
FIELD NOTES ON SOME RALLINÆ. By (Miss) J. A. Fletcher, R.A.O.U., Springfield, Tasmania	45
STRAY FEATHERS.—Great Flight of Swifts, 48; Do Variations in Seasons Affect the Size of Eggs? 48; Descriptions of New Eggs, 48; Springfield (Tasmania) Notes, 49.	
FROM MAGAZINES, &C.—Early History of the Australian Cassowary, 50; The Passenger Pigeon, 51; "Austral Avian Record," 53.	
REVIEW	54
CORRESPONDENCE	55
OBITUARY NOTICE	59
BIRD OBSERVERS' CLUB	59
SOUTH AUSTRALIAN ORNITHOLOGICAL ASSOCIATION	61
NOTES AND NOTICES	63

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"Birds of a feather."

VOL. XIII.]

1ST JULY, 1913:

[PART I.

On the Osteology of the Red Wattle-Bird (*Anthochæra carunculata*).

BY R. W. SHUFELDT, M.D., HON. MEM. R.A.O.U., WASHINGTON,
D.C.

ON the 19th of October, 1912, I received, per favour of Mr. A. J. Campbell, R.A.O.U., an excellent and complete articulated skeleton, which I understand was prepared at the National Museum, Melbourne, of an adult specimen of the Red Wattle-Bird, known to science as *Anthochæra* * *carunculata*, one of the *Meliphagidæ* of Australia. It was Mr. Campbell's wish that I prepare a brief, illustrated account of the osteology of this species as a contribution to *The Emu*, of which he is co-editor. This request was seconded, in a letter dated 8th June, 1912, by Mr. F. Erasmus Wilson, the hon. secretary of the Royal Australasian Ornithologists' Union, on behalf of the Council. Mr. Campbell's letter of transmittal was dated at Melbourne, 14th September, 1912.

At the time this skeleton came into my possession for description I had before me several hundred specimens of Pleistocene fossil birds from Oregon to work up—the task being well in hand—and I could not conveniently set it aside in order to undertake what my colleagues in the R.A.O.U. had favoured me with, and done me the honour to ask me to describe for the use of avian osteologists in Australia.

I was especially pleased to get a skeleton of *Anthochæra carunculata* to study, for I had already published descriptions of the skeletons of a very large number of the Passerine birds of the United States, with some of those of China, the Philippine Islands, and elsewhere, and expressed opinions with respect to their classification.† A few years ago I examined and compared skeletons of a number of the *Cærebidæ*, *Nectariniidæ*, *Meliphagidæ*,

* So spelt in the new "Check-list," R.A.O.U., but formerly *Acanthochæra*.

† Shufeldt, R. W., "An Arrangement of the Families and Higher Groups of Birds," *Amer. Anat.*, vol. xxxviii., Nos. 455-456, Boston, Nov.-Dec., 1904, pp. 835-856.

Also, "Contributions to the Comparative Osteology of the Families of North American Passeres," *Jour. Morph.*, vol. iii., No. 1, Boston, June, 1889, pp. 81-114, Pls. V. and VI.

and *Certhiidae*, sent me for the purpose by Dr. F. E. Beddard, F.R.S., Prosector of the Zoological Society of London. These were subsequently described and published,* and the material upon which the paper was based—some 13 skeletons in all—is before me at the present writing. Those of the *Meliphagidae* examined belonged to the genera *Acanthorhynchus*, *Prothemadera*, *Entomyza*, and *Acanthogenys*.

In the collections of the United States National Museum at Washington there are numerous osteological specimens in the Division of Birds, which I have been permitted to use in writing this contribution. For this privilege I am indebted to the authorities of that institution, and especially to Dr. Charles W. Richmond, of the Bird Division. Among the specimens to which I refer there is a nearly complete skeleton of *Creadion carunculatus* (No. 18,289), as well as a sternum of *Anthochaera carunculata* (No. 9,344). There is quite a considerable collection of sterna of Australian Passerine birds of many species, and they are all interesting objects to study. Others which have proved of value by way of comparison are the following skulls and skeletons:—

- 1.—*Drepanis*, sp. ?, 4 skulls (see Sharpe's "Hand-list of Birds," vol. v., p. 129).
- 2.—*Vestiria coccinea* (skull No. 19,130; see Sharpe's "Hand-list of Birds," vol. v., p. 130).
- 3.—*Oreomyza bairdii* (skeleton 19,097; see Sharpe's "Hand-list of Birds," vol. v., p. 132).
- 4.—*Loxioides bailleui* (skeleton 19,098; see Sharpe's "Hand-list of Birds," vol. v., p. 136).
- 5.—*Cephalopterus pardaliger* (skeleton 19,688; Sharpe ?)
- 6.—*Himatione sanguinea* (skeleton 19,092; Sharpe's "Hand-list of Birds," vol. v., p. 131).
- 7.—*Himatione parva* (skeleton 19,136. Sharpe ?)
- 8.—*Acrulocercus braccatus* (skeleton 19,125; Sharpe's "Hand-list of Birds," p. 91).
- 9.—*Tropidorhynchus*, sp. ? (skull 18,410; Sharpe's "Hand-list of Birds," p. 92).
- 10.—*Creadion carunculatus* (skeleton 18,289; Sharpe's "Hand-list of Birds," vol. v., p. 544).

In Sharpe's "Hand-list of Birds" the genus *Anthochaera* is found on page 89 of vol. v., where two species are given—namely, the one here considered and *A. inauris*, of Tasmania.

The specimens which were kindly supplied me by Dr. Beddard, alluded to above, are in the subjoined list, with their Zoological Society numbers attached.

* Schufeldt, R. W., "On the Comparative Osteology of the Passerine Bird *Arachnothera magna*," *Proc. Zool. Soc., Lond.*, Aug., 1909, pp 527-544, Pl. LXVIII.

No.	No.
289. <i>Cyanerpes cyanea</i> .	306. <i>Cæreba chloropyga</i> .
345. <i>Arachnothera longirostris</i> .	781. <i>Acanthorhynchus</i> , sp. ?
318. „ <i>magna</i> .	365. <i>Prothemadera novæ-zealandiæ</i> .
497. <i>Leptocoma grayi</i> .	702. <i>Entomyza cyanotis</i> .
340. <i>Cinnyris chalybeus</i> .	725. <i>Anthogenys ruficularis</i> .
426. <i>Diglossa baritula</i> .	712. <i>Climacteris scandens</i> .
500. <i>Anthreptes malaccensis</i> .	

In the excellent work by A. J. Campbell (2 vols., 8vo) on the "Nests and Eggs of Australian Birds," we find the following arrangement—that is, the *Nectariniidæ*, or Sun-Birds, containing the single species *Cinnyris frenata*, followed by the *Meliphagidæ*, or Honey-eaters, thus:—

FAMILIES.

SUB-FAMILIES.

<i>Meliphagidæ</i>	{ <i>Zosteropineæ</i>	27 species
	{ <i>Myzomelineæ</i>	27 „
	{ <i>Meliphagineæ</i>	69 „
<i>Dicædiæ</i> . (Flower-peckers, with 10 species).		

Several species of *Anthochæra* are listed under the *Meliphagidæ*, some of which are differently classified by Sharpe in his "Hand-list"; as, for example, *Anthochæra ruficularis* is there listed as *Acanthogenys ruficularis*, and so on.

Sharpe gives but two species of *Anthochæra*—namely, *A. carunculata* and *A. inauris* (p. 89).

Anthochæra mellivora (Campbell) is *Anellobia chrysoptera* of Sharpe's "List," and *Anthochæra lunulata* (Campbell) is *Anellobia lunulata* in the same work.

In any event, it will be appreciated, after reviewing the foregoing material at my command, that a very fair *comparative* study of the skeleton of *Anthochæra carunculata* can be made through its use, and to this I shall now proceed without further delay.

The Skull (Plate I., fig. 1, and Plate III., fig. 16).—With respect to its general *facies*, the skull, including the lower mandible, of this Red Wattle-Bird possesses all the characteristics of that part of the skeleton in any of the ordinary *Passeres* of a more or less similar size. On its upper surface the cranial portion is smooth, and the vault of the brain-case semi-globular. The superior margins of the orbits are sharp and somewhat elevated above the depressed frontal region standing between them. Anteriorly, over the cranio-facial part, the aforesaid depression is best marked, while beyond it the upper surface of the somewhat broad mandible slopes gently away. Beyond this again, the culmen between the very large, subelliptical narial apertures is notably narrow; the rest of the mandible is slightly decurved, and terminates rather acutely at its apex.

When thus viewed from above, the skull of *Creadion carunculatus* very much resembles *A. carunculata*, as will be observed by comparing figs. 15 and 16 of Plate III., where it will be noted that *Creadion* simply has the fore part of the skull narrower than in

Anthochaera, the general characters being identical. These species are in different families and placed far apart by Sharpe, the former being arrayed with the *Eulabetidae*, and having between this last and the *Meliphagidae* no less different and distinct families than the *Icteridae*, *Tanagridae*, *Fringillidae*, and others.

However, on lateral and basal views, the skull in *Creadion* differs considerably from the corresponding features in the skull of the Red Wattle-Bird.

Skulls that more or less closely agree with the skull of *Anthochaera carunculata* are those of *Entomyza cyanotis* and *Prothemadera novæ-zealandiæ*, both of which species belong to the *Meliphagidae*, and complete skeletons of both are before me at this writing.

In most particulars the skull of *Entomyza cyanotis* is more like that of *Anthochaera carunculata* than any other Meliphagidine skull I have at hand, with the exception of *Acanthogenys ruficularis*, which, although a smaller species of this family, has a skull that closely agrees with the skull of *Anthochaera*. In fact, Gadow arrayed both the genera *Acanthogenys* and *Anellobia* with *Anthochaera*, and he doubtless had examined their osteology ("Catalogue Birds Brit. Mus.," ix., p. 262, 1884).

Turning to the lateral aspect of the skull in our subject, we are to note how largely the aural aperture is closed over posteriorly by the flat shield of bone furnished chiefly by the exoccipital. In not a few *Passeres* this flap is far more bulging and produced further forward, causing the auricular opening to face directly to the front, as in *Arachnothera longirostris* and other forms among the *Nectariniidae*.

In *Anthochaera* the post-frontal and squamosal processes at the side of the cranium are of about an equal length and prominence, the latter being situated mesiad to the former, while the valley between them is deep oval in contour and conspicuously defined. Such forms as *Hemignathus procerus* and its near allies have these apophyses practically aborted (fig. 18, Plate IV.), while in *Vestiaria coccinea* only the squamosal one is developed, and it is lamelliform in type, with the flat surface facing forwards and upwards.

Anthochaera carunculata has a large orbit with great joining vacuities in the anterior wall of the brain-case and the inter-orbital septum (Plate I., fig. 1). This feature is less marked in some other Meliphagidine birds, though not so very much so.

The basi-sphenoidal rostrum is straight, being directed about equally forwards and upwards, having its lower margin rounded and its upper cultrate.

A *pars plana* in front of either orbital cavity is a very large bone, and, apart from the circumscribed foramen above it, completely divides the latter from the rhinal chamber in front of it. It fuses completely with the lachrymal anteriorly, and with it extensively spreads out over the delicate and very slender zygomatic bar below, without actually coming in contact therewith, while in front it presents a deep concavity with projecting

margins. Posteriorly, it has a curvature or concavity adapted to the general form of the orbit, of which it forms the entire anterior wall.

Turning to the skull of a small species of *Acanthorhynchus* at hand, it is to be observed that in it the *pars plana* are also very large and concavo-convex in contour, simulating what we find in many species of *Trochilidæ*, in which family, as a rule, they are immense in proportion to the size of the rest of the skull, as in *Archilochus alexandri*. Antero-posteriorly they are considerably deeper in *Prothemadera novæ-zealandiæ* than they are in *A. carunculata*.

All the species of this section of the *Meliphagidæ* have a large nasal bone, which is concave mesiad and convex externally.

The osseous tomia of the superior mandible are sharp, and in *A. carunculata* slightly produced below the roof of the palate.

Creadion carunculatus has the most of the morphology of the structures here being described very different; in fact, the skull of this species comes much nearer some of the congeners and representatives of the *Icteridæ*, and its consideration has only been introduced here with the view of exhibiting how it and its near affines depart from the *Meliphagidine* types with respect to this part of its osteology. Still, the departures here are not as great as those presented by these parts of the skull in *Cinnyris chalybea*, a species belonging to a large genus of the *Nectariniidæ*, and considered to be much nearer related to the *Meliphagidine* Red Wattle-Bird than is any member of the family to which *Creadion carunculatus* belongs. Indeed, we find in *Cinnyris chalybea* the big *pars plana*, the hair-like quadrato-jugal bar, and the still finer nasal bone, together with some of the associated osseous structures of the face in this bird, very much as they are found in any of the typical Humming-Birds of the *Trochilidæ*. Particularly does this apply to the marvellously attenuated nasal bone, so different from what we meet with in this respect among the ordinary *Passeres*.

With respect to the skulls of such species as *Oreomystes bairdii* and *Himatione parva* of the family *Drepanididæ*, it may be said that they approach, in all their general characters, nearer to many of the North American Warblers (*Mniotiltidæ*) than to any of the *Meliphagidæ* as a whole, or to *Anthochaera carunculata* in particular. Little or nothing would be gained by comparing such forms with our subject here, and we therefore pass them by. Even *Himatione sanguinea*, with its longer and more curved beak, falls in the same category, though it may be a bit—a very slight bit—nearer than the two first-mentioned species. Birds of the genus *Himatione*, and especially *H. sanguinea*, possess the most extraordinary palatine bones, the postero-external angles being drawn out into long hair-like processes, while the rest of the bone, on either side, is but slightly stouter, rendering the entire structure one of extreme delicacy.

Already I have remarked, in another connection, that “so

entirely different is the skull in such a species as *Prothemadera novæ-zealandiæ* of New Zealand—a bird placed among the *Meliphagidæ*—that a separate description would be required to give an account of it. Here the *nasals* are very broad antero-posteriorly, and each is pierced by a central foramen—an unusual character. Then the *pars planæ* are very thick from before backwards, and a longitudinal groove marks the external aspect of each.

"In not a few particulars *Acanthogenys ruficularis* of Australia is a *Meliphagidine* species with a skull not at all unlike what we find in the species of *Acanthorhynchus*, and these forms are more or less nearly related. *Acanthogenys* has the broad *nasals*, each pierced by the small central foramen, and there are several other points in the two skulls of more or less close agreement. But such representatives of the *Meliphagidæ* have no special relationship with the *Cærebidæ*, and even less with the typical *Nectariniidæ*. Judging from the skulls alone, it is not difficult to recognize the more or less close relationship existing among the species I have before me of the genera *Entomyza*, *Acanthogenys*, and *Prothemadera*, all of which present characters in this part of the skeleton quite different from anything we find in *Arachnothera*, and surely offer no skull-characters at all approaching any of the *Trochilidæ*."*

Turning our attention next to the *basis cranii* of *Anthochæra carunculata*, we are to note that all the characters it presents are essentially those pertaining to this part of the Passerine skull. The large *foramen magnum* is of a subcordate outline, with rounded posterior apex and nearly transverse, straight base situated anteriorly. Hemispherical in form, the *occipital condyle* is of extremely minute proportions, unnotched and sessile. Somewhat elevated in character, smooth, and of considerable extent, the *basi-temporal area* presents the usual fossæ, at the bases of which we note the foramina for certain vessels and nerves passing to and from the brain-case.

* Schufeldt, R. W., "On the Comparative Osteology of the Passerine Bird *Arachnothera magna*, *Proc. Zool. Soc.*, Lond., 1909 (Aug., 1909), pp. 527-544, Pl. LXVII. The two paragraphs quoted are found upon page 533 of this paper. When this contribution appeared there was considerable elation in many quarters over the fact that I had found all the representatives of the *Nectariniidæ* and *Meliphagidæ* to be completely Passerine in the matter of their osteology, and in no way especially related to the Humming-Birds (*Trochilidæ*). Indeed, so exultant were some of our avian morphologists, and nearly all of our systematic ornithologists, over this announcement, and the candid and emphatic manner in which it was set forth, that the circumstance was quite lost sight of by them, that, although there was but little in the skeleton of any of the birds belonging to the *Nectariniidæ* and *Meliphagidæ* which at all suggested an affinity between those two families and the *Trochilidæ*, this circumstance in no way detracted from the truth of my previous demonstrations, published in many places in Europe and America, that the skeleton of a typical Swift (*Cypseli*) and a Humming-Bird (*Trochili*) were, in their corresponding characters, apart from their "unnotched sterna" and "long hands," essentially utterly different, and it still remains for the avian taxonomer to decide what such wide differences in skeletal structure as exists between these two groups of birds, the *Cypseli* and *Trochili*, really indicates.

Quadrates and *pterygoids* are of the usual Passerine type, though it may be said that the distal extremities of the latter are but very slightly expanded.

Either *palatine* is a shell-like formation, articulating somewhat extensively beneath the sphenoidal rostrum with the fellow of the opposite side, while the posterior angle of either bone is produced as a long spicula-form process, and the narrow prepalatine is extended forward to make the usual articulations with the bones of the roof of the mouth. Mesially, there is a considerable interval between the prepalatines, and in this interval the posteriorly bifurcated and anteriorly truncated *vomer* is visible.

The floor of either orbit, and all the central portion of the roof of the mouth, are entirely deficient in bone, and this condition obtains in the case of all the *Meliphagidæ*, owing to the extreme slenderness of the palatines, pterygoids, zygomas, the lateral processes of the premaxillary and small maxillo-palatines.

In the larger representatives of the *Meliphagidæ*, if not in all, the lateral masses, composed on either side of the ethmoidal element, the lachrymal and *pars plana*, form one of the largest and altogether the most conspicuous part of the mid-region of the skull, and through the various articulations of this mass—or masses—the stability of the cranio-facial region of the skull is practically insured and maintained. This is the case in many Passerine birds.

Posteriorly, the *occipital area* is distinctly circumscribed by a low, linear curved line, convex superiorly, and carried down laterally upon either side to the external auditory meatus. In the middle line here there is always present a conspicuous and smoothly rounded *supra-occipital prominence*, though not quite as well marked a one as in *Nectariniidæ* and *Trochilidæ*. Through the middle of this the aforesaid line always passes. No foramina occur upon either side of it, and a similar prominence is present in the various species of birds named in the foregoing pages of this paper.

Anthochaera carunculata, in common with other Meliphagidine species, possesses the usual V-shaped lower mandible, which is slightly decurved from about its middle to the apex (fig. 1, Plate I.)

The upper and lower borders of the rami are smooth and rounded, while distally the considerable symphysis present is concave above and correspondingly convex below. A large elliptical *ramal vacuity* is always present in either ramus of the jaw in all the typical *Meliphagidæ*, and the sutural boundaries of the several bones in its neighbourhood are entirely absorbed. The articular end of this mandible is truncated posteriorly, concave above for the quadrate, and correspondingly convex below, with the usual various apophyses short and blunt.

In such species as *Prosthemadera novæ-zealandiæ* the hinder part of either ramus is markedly weakened through the presence of the unusually large ramal vacuity on either side, the upper and

lower boundaries being thus reduced to extremely slender rodlets of bone, which in any case would require but little to fracture.

There may be a minute *articular sesamoid* present at the quadrate-mandibular articulation on either side, and a free, ossified *siphonium* leading into the aural cavity, posterior and above either quadrate, such as we find in many other birds.

Such *Meliphagidæ* as the species here being considered, and representatives of the genera *Entomyza*, *Prothemadera*, and others, have the *hyoidean apparatus* constructed upon a similar plan, and this requires a more careful description than I have accorded it in previous papers of mine on the subject.

We find that the *thyro-hyals* do not curve up over the skull behind, as they do in some of the *Nectariniidæ*, as I have elsewhere pointed out.

In *Anthochaera carunculata* and its near allies the *glosso-hyal* is of some size (fig. 3, Plate I.), rather elongate, V-shaped, concaved above, convex below, and with its postero-external angles somewhat produced. Anteriorly it is slightly bifurcated, and only semi-ossified. Mesially, from beneath this *glosso-hyal* there extends far forwards a long, slender bundle of bony bristles, which, for their anterior third or more, minutely re-divide so as to form a stiff little distal free brush, which the bird employs in feeding itself, after the fashion of its well-known, peculiar habit.

This arrangement is equally well developed in other *Meliphagidine* genera, as stated in a former paragraph.

The *basi-hyal* is rather short, laterally compressed, and is extended posteriorly in the middle line by a semi-ossified, flattish *uro-hyal*.

Either *cerato-branchial* is a long, nearly straight, very slender osseous rod, while the flattened *epi-branchials* are very short, and present but very slight curvature. The lengths of the latter vary somewhat in the different species of the *Meliphagidæ*.

The *sclerotal platelets* of the eye present nothing worthy of a special description, as they in no way differ from those structures in ordinary Passerine birds of this size among the assemblage as a whole (fig. 2, Plate I.)

Sharpe retained the genus *Acanthorhynchus* (Gould) in the family *Meliphagidæ* (*loc. cit.*, vol. v., p. 71). It will be seen in the list of material given above that I have at hand a small unidentified species of this genus (rough skeleton No. 718), it having been sent me, as pointed out, by Dr. F. E. Beddard. Of this specimen I said, on page 536 (footnote) of my paper on *Arachnothera magna*, cited above:—"Without going into details, and judging from the skeleton alone, I would remark that the Australian genus of birds named *Acanthorhynchus*, which have been referred to the *Meliphagidæ*, possess skeletal characters which, in the main, agree better with the corresponding ones in *Arachnothera* than with any of the same characters as seen in the short-billed *Meliphagidæ*." After a careful comparison of the aforesaid skeleton of *Acanthorhynchus* with additional material, the fact is

made clearer than ever that this bird at least belongs among the *Nectariniidæ*, the entire structure of its skull and tongue pointing unmistakably to this conclusion. The only question that can be raised is that the skeleton at hand was accidentally misidentified by the one who labelled it at the Zoological Society of London prior to transmitting it to me, and the skeleton is of some small Nectarine species instead of a Meliphagidine one. Such slips have happened to the best of naturalists.

REMAINDER OF THE AXIAL SKELETON.

A consideration of this part of the osteology of *Anthochæra carunculata* need not detain us long, and, indeed, this may likewise be said of the skeletology of the limbs of our subject. The reason for this lies in the fact that in my above-cited paper on the osteology of *Arachnothera magna* quite a complete account is presented of the osteology of these parts of the skeleton in such Meliphagidine species as *Entomyza cyanotis* and *Prosthemadera novæ-zealandiæ*, and the characters there presented on the part of any of the bones to be compared agree, in the main, with the corresponding ones as we find them in *Anthochæra carunculata*.

This last-named species agrees with *Prosthemadera* and *Entomyza* in possessing 19 vertebræ between the skull and the pelvis, and of these vertebræ 14 are cervicals and 5 are true dorsals. An extremely minute pair of very rudimentary free ribs are attached to the 13th cervical vertebra, while the pair articulating with the 14th are well developed, and possess small epipleural appendages. These are shown as the leading pair in fig. 4 of Plate I. of the present paper. From that illustration it will be observed that the last pair of ribs are *pelvic ribs*; they lack unciform processes, and their hæmapophyses do not reach the sternum.

All this part of the skeleton in the Red Wattle-Bird is essentially Passerine, and agrees, in the main, with any ordinary Passerine bird, quite irrespective of its habitat.

While *Anthochæra* agrees with *Entomyza* and *Prosthemadera* in having six free vertebræ and a *pygostyle* in the skeleton of its tail, these are far better developed than they are in *Entomyza cyanotis*, and still better than they are in *Prosthemadera novæ-hollandiæ*, in which last-named species they are very considerably reduced in size as compared with those in the tail of the Red Wattle-Bird, and yet the two birds are about of a size.

The *pelvis* of the three species here being compared likewise closely agree in all of their essential characters, and this composite bone is quite typically Passerine in its structure and morphology in these particular species of the *Meliphagidæ*. It may be noted, however, that the *pelvis* of *Anthochæra carunculata* is actually as well as relatively larger than it is in *P. novæ-zealandiæ* and *E. cyanotis*, and, in adult individuals, may at once be distinguished by the double row of five—or five pairs—of intervertebral foramina existing in the post-acetabular region between the

transverse processes of the co-ossified uro-sacral vertebræ. These are either entirely absent or else extremely minute in the representatives of the other two genera. They occur again, however, in the pelvis of *Acanthogenys ruficularis*, another short-billed Meliphagidine.

A glance at fig. 5 of Plate I. of the present paper is sufficient to convince the avian osteologist that not only the bones of the shoulder-girdle, but the sternum as well, are all typically Passerine in their morphology and arrangement with respect to articulations.

Apart from the matter of variation in size, and a few insignificant details in character, all this part of the skeleton in *Anthochaera carunculata* essentially agrees with *Entomyza* and *Prosthemadera* as represented by the two foregoing species of these genera.

Sternum, *scapula*, *coracoids*, and *os furcula* are all as distinctly Passerine as they are in an average Thrush. It is interesting to note, however, that in one particular the sternum of *Anthochaera carunculata* agrees better with that bone in *Prosthemadera novæ-zealandiæ* than it does with *Entomyza cyanotis*. This agreement consists in a relatively longer manubrial process and a convex border for the lower moiety of the anterior part of the sternal carina, instead of a concave one, as it is in *Entomyza cyanotis*.

This lengthening of the manubrium sterni is also present in *Anellobia lunulata* of Western Australia* and in other species.

In *Meliphaga phrygia* the *hypocleidium* of the *os furcula* is remarkably long, agreeing in this particular with the Red Wattle-Bird (fig. 5, Plate I.) This is also the case, however, in other Australian *Passeres* having no special relationships with the *Meliphagidæ*, as in *Sphecotheres* among the *Oriolidæ*, in which the sternum and shoulder-girdle very closely agree with *Anthochaera*.†

So far as the *Meliphagidæ* and some of the allied families are concerned, I present a very complete account of the comparative

* There sometimes seems to be an individual variation in the matter of this character, as the manubrium is somewhat shorter in the sternum of a female *Anthochaera carunculata*, collected on the 5th of May, 1865, by E. P. Palmer, (?) at Dobroyde, and numbered 9,394 in the collection of the U.S. National Museum. (I fail to find this locality on any of the standard maps.)

† In the species formerly known as *Grallina australis*, which occurs on Clarence River, New South Wales, the sternum is remarkable for having large elliptical *foramina*, one on either side, in its xiphoidal extremity, instead of "notches," as is the rule throughout the *Passeres*. There are three of these sterna in the Collections of the U.S. National Museum (Nos. 9,396, ♂, 9,278, ♀, and 9,279, ♀), but this character occurs only in the sternum of the male.

Coues states in the "Century Dictionary," under *Grallina*:—"A genus of oscine Passerine birds, variously located in the ornithological system, lately placed in a family called *Prionopidæ*. The Pied Grallina (*G. picata*) inhabits Australia. It is entirely black and white, and 11 inches long. A second species, *G. bruijni*, is found in the Arfak Mountains of New Guinea; also called *Tanypus* and *Grallipes*" (p. 2,594). The only birds known to me, to which the specific name *bruijni* has been applied, belong to the *Paradisæidæ*. It would be very interesting to examine the entire skeleton of a species exhibiting the above described character in the sterna of the two sexes. I believe this condition may occasionally be found to occur in *Ptiloris paradisæa*, of which species I have five sterna before me (No. 9,366, Coll. U.S. Nat. Mus., ♂, right side). The osteology of the *Paradisæidæ* stands in need of comparative description.

osteology of the *sternum* and *shoulder-girdle* in my above-cited *Proc. Zool. Soc.* paper on *Arachnothera magna*, rendering it entirely unnecessary to reproduce such descriptions here, especially as the matter of space is to be taken into consideration.

THE APPENDICULAR SKELETON : THE PECTORAL LIMB.

Such *sesamoids* as the *os humero-scapulare* at either shoulder-joint, and the *patellæ* at the knees, completely ossify in all *Passeres* as a rule ; and, as it is the case of many of the birds mentioned above, it is fair to presume that these elements are also performed in bone in the Red Wattle-Bird, though they have all been lost in the skeleton now at hand (figs. 6 and 7, Plate I.)

As is the case with nearly the entire skeleton of *Anthochæra carunculata*, the humerus is a completely pneumatic bone, and has an extreme length of 3.5 cms. The shaft is smooth, sub-cylindrical in form, and nearly straight, exhibiting but little of the usual sigmoidal curvature seen in the humeri of many species of birds. Thoroughly surrounded by a conspicuous and thickened margin, the pneumatic fossa is both large and deep, exhibiting several foramina at its base.

The radial crest is short, straight, and not lofty, ending abruptly on the shaft, nearly opposite where the ulnar tuberosity terminates on the other side.

At the distal end of the shaft we meet with all the features present there in the humerus of any Passerine bird, they being unusually large and prominently produced—in fact, distinctly more so than they are in *Prosthemadera* or *Entomyza*. We invariably meet with a small *sesamoid* at the elbow in all of these birds.

Structurally, the skeleton of the arm in *Anthochæra* comes much nearer *Prosthemadera* than *Entomyza*—that is, in the form and proportionate lengths of the bones composing it.

So well are the bones of the *antibrachium*, *carpus*, and *manus* shown in fig. 6 of Plate I. that any special description of them would seem to be almost superfluous.

None of the *phalanges* ever supports “claws,” while especial attention is invited to the prominent and much individualized olecranon process of the *ulna* ; to the peculiar little tubercle for the guidance of special tendons on the upper side of the distal extremity of the bone ; and to the deep tendinal groove passing down the entire length of the index metacarpal on its anterior aspect. This is for the passage of the tendon of the *flexor digitorum profundus* muscle, and occurs in other species.*

THE PELVIC LIMB (fig. 7, Plate I.)

This limb seems to be non-pneumatic in all the species mentioned in the present paper, such being the rule throughout the *Passeres* generally.

Femur has an extreme length, in *Anthochæra carunculata*,

* Shufeldt, R. W., “The Myology of the Raven,” p. 140, fig. 39.

Prosthemadera novæ-zealandiæ, and *Entomyza*, of 3 centimetres, the characters of the bone being very similar in all three of these genera. The summit, including the head and trochanter, is flat; the shaft is straight and cylindrical, and the condyles of considerable size proportionately. These last are sharp in front in *Anthochaera*, but not so in the other species named, while in all the groove for the head of the fibula on the posterior aspect of the external condyle behind is invariably well marked. It would be difficult to distinguish the femur of *P. novæ-hollandiæ* from that of *E. cyanotis*, while the form of the condyles anteriorly in *Anthochaera carunculata* is characteristic as well as diagnostic in so far as these birds go.

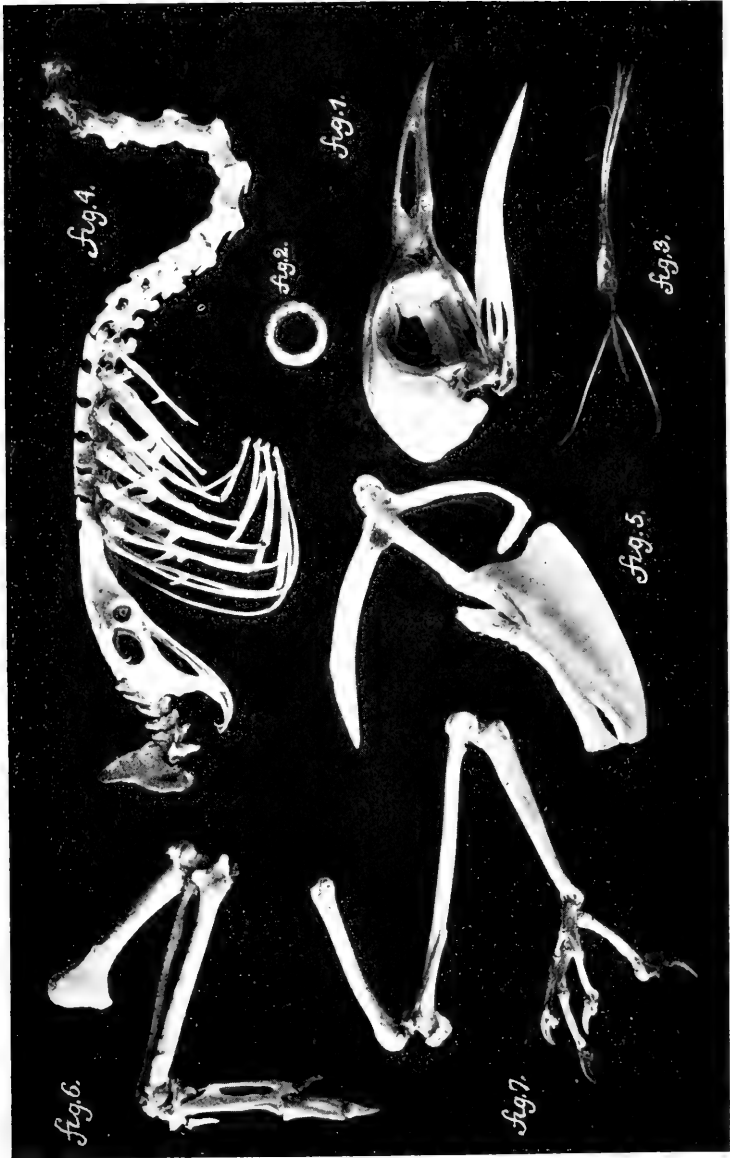
The *tibio-tarsus* has an extreme length of 5.4 cms. in *A. carunculata*, 5.3 cms. in *E. cyanotis*, and 5.9 cms. in *P. novæ-zealandiæ*. In all it is straight, and presents the typical Passerine characters. We note that the *fibula* is feebly developed, and in *P. novæ-zealandiæ* does not extend below the fibular ridge on the side of the *tibio-tarsal* shaft.

Of all the bones of the pelvic limb, in the case of the Red Wattle-Bird, the *tarso-metatarsus* is most diagnostic. Indeed, it is peculiar in its morphology, and may be recognized on sight and distinguished at once from the bone in the case of any of the other *tarso-metatarsi* of *Meliphagidines* at hand. This is due to the formation of the entire shaft, which, upon its outer aspect, is flat and smooth, being as broad proximally as the shaft and outer surface of the *hypotarsus* combined, completely shutting the latter out of sight on this view. From this point it gradually narrows down as it proceeds distally till it comes to be the width of the external trochlea, upon the outer side of which it merges. For the proximal moiety, or rather more, this is but a thin plate; and, as the inner border of the shaft is somewhat raised posteriorly, and the *hypotarsus* is but a small cube in form, the *posterior* aspect of the shaft, from the latter down to the free *metatarsal*, has the appearance of being deeply excavated, which excavation gradually shallows as we proceed distally.

The *hypotarsus* is four times pierced for the passage of tendons, the anterior pair of foramina being the larger, and the posterior ones very small. The distal end of the bone bearing the three trochlea is greatly bent posteriorly—a bending which is still more evident in the case of the *tarso-metatarsus* of *P. novæ-zealandiæ*.

P. novæ-hollandiæ has the outer side of the shaft of its *tarso-metatarsus* formed like *Anthochaera carunculata*, but to a very less degree, while it is entirely absent in the case of *Entomyza cyanotis*, the bone in the latter species being much as we find it throughout all medium-sized Passerine birds.

In *A. carunculata* it has an extreme length of 3.4 cms.; in *E. cyanotis*, 3.5 cms.; and in *P. novæ-zealandiæ*, 3.85 cms. In all these species the first *metatarsal* (free) is of considerable size as compared with many other birds of similar sizes.



FROM A PHOTO. BY R. W. SHUFELDT.

Pes is normally constituted osteologically, being Passerine in every particular. The joints of the outer toe are delicate and small, while the claw of *hallux* is a big one, being equal, and more, in size to any two of the other claws of the foot combined.

CONCLUSIONS.

Judging from such material as I have at hand, and without having had the opportunity to study the osteology of some 40 other genera of the *Meliphagidæ*, it is clear, from what has been brought out in this paper, that, in so far as the skeleton is concerned, *Anthochæra carunculata* comes nearer to *Prosthemadera novæ-zealandiæ* than it does to *Entomyza cyanotis*, thus confirming the *linear arrangement* for these genera of Sharpe in his "Hand-list" (vol. v., p. xiv.), where he places *Manorhina* and *Myzantha* between *Anthochæra* and *Prosthemadera* on the one hand and *Anellobia*, *Acanthogenys*, *Myza*, *Leptomyza*, *Acrulocercus*, and *Chatoptila* between *Anthochæra* and *Entomyza* upon the other.

Osteologically, *Anthochæra carunculata* may be at once distinguished from the other two or three *Meliphagidines* with which it has here been compared by some of the characters of its pelvis; by the relatively much larger size of the bones composing the skeleton of its tail; by the sharp anterior ridges of the femoral condyles; and, with great certainty, by the morphology of its tarso-metatarsi, together with the relative lengths of the bones of the pelvic limb.

In the plates accompanying this paper. (Plates II.-IV.) are presented the skeletons of other Passerine birds of Australia more or less related to the Red Wattle-Bird—some remotely, others nearer—which will be of marked value in the way of comparison, and of assistance to the avian osteologist of the future, when the study of the skeletons in other genera is taken up.

EXPLANATION OF PLATES.

(All the figures in these plates are reproductions of photographs made direct from the specimens by the author. Adult. Natural size.)

PLATE I.

- Fig. 1.—Skull of *Anthochæra carunculata*, seen upon right lateral aspect. Mandible articulated, but left ramus somewhat elevated, owing to the loss of its articular extremity.
- Fig. 2.—Cirlet of sclerotal plates of an eye, viewed upon their outer aspect.
- Fig. 3.—Hyoidean arches, with the extended pair of cartilaginous rods which bear at their distal ends the "brush" of the tongue.
- Fig. 4.—Right lateral view of the trunk skeleton, with shoulder-girdle and sternum removed. (See fig. 5.)
- Fig. 5.—Shoulder-girdle and sternum, seen upon right lateral view. Left scapula, clavicle, and upper border of sternum of the left side can be seen in part, owing to the fact that the view is not absolutely direct.
- Fig. 6.—Skeleton of the left pectoral limb. Palmar side. For the most part the bones are normally articulated, but the humerus subluxated.
- Fig. 7.—Left pelvic limb; bones *in situ*, but subluxated. The patella is performed in bone, and the fibula is notably short.

PLATE II.

- Fig. 8.—Left lateral view of the skeleton of *Creadion carunculatus*, adult, natural size. (Coll. U.S. Nat. Mus., No. 18,289, where it is incorrectly catalogued as "*Anthochaera carunculata*," Taranga Islands.) In this specimen the skull has been perfectly cleaned up, but the balance of the skeleton, as will be observed, is more or less in the rough. It shows, however, many of the characters well, and the proportionate size, as compared with *Anthochaera carunculata*, it being about one-third less. (See Sharpe's "Hand-list of Birds," vol. v., p. 544.)

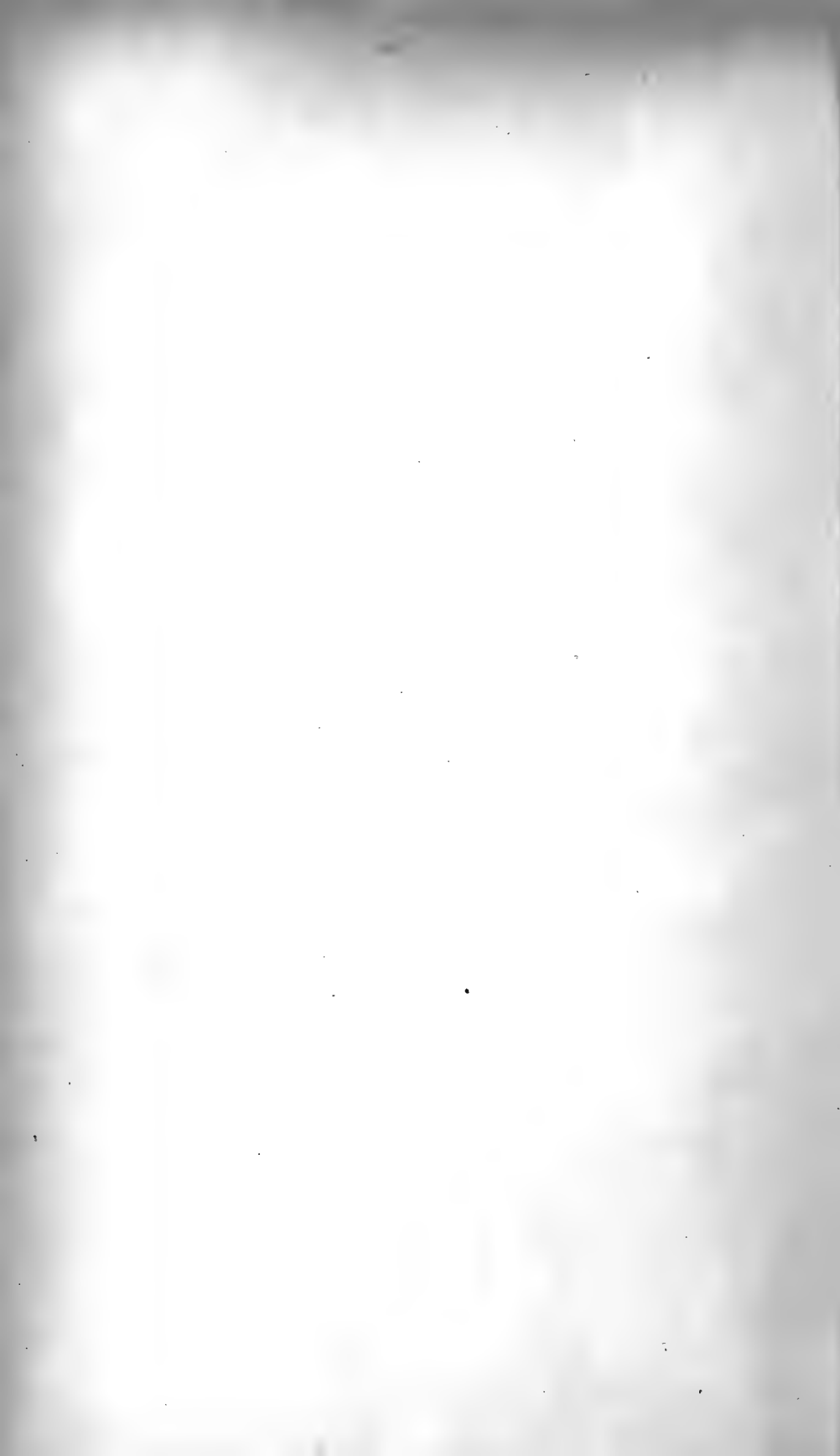
PLATE III.

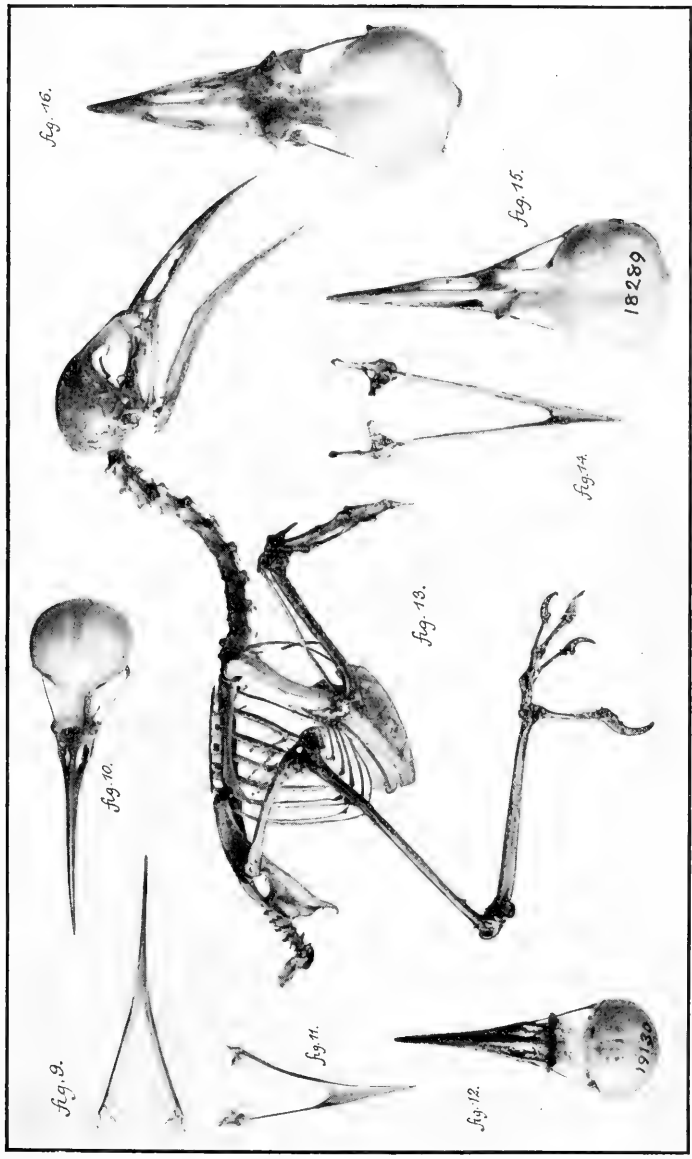
- (All the figures in this plate are natural size and reproduced from the author's photographs of the specimens.)
- Fig. 9.—Lower mandible of *Hemignathus procerus*, viewed from above; adult. (Coll. U.S. Nat. Mus., No. 19,094.) The mandibles in this species are markedly, though gradually, curved downward for their entire lengths. The skull is shown in fig. 10 of this plate. (See Sharpe's "Hand-list of Birds," vol. v., pp. 134, 135.)
- Fig. 10.—Superior view of the skull of *Hemignathus procerus*, of which the mandible is shown in fig. 9 of this plate.
- Fig. 11.—Lower mandible of *Vestiaria coccinea*, adult. Seen on superior aspect. (Coll. U.S. Nat. Mus., No. 19,130.) The bill is powerfully curved downward in this species. The skull is shown in fig. 12 of this plate, and is from the same specimen.
- Fig. 12.—Superior view of the skull of *Vestiaria coccinea*, of which the mandible is shown in fig. 11 of this plate.
- Fig. 13.—Right lateral view of the skeleton of *Acrulocercus braccatus*, adult. (Coll. U.S. Nat. Mus., No. 19,125.) Limbs of the left side and the hyoidean arches removed; right clavicle broken and somewhat displaced; otherwise quite perfect. (See Sharpe's "Hand-list of Birds," vol. v., p. 91.)
- Fig. 14.—Superior view of lower mandible of *Creadion carunculatus*. (No. 18,289, Coll. U.S. Nat. Mus.) From the skeleton shown in fig. 8, Plate II., of the present paper (which see).
- Fig. 15.—Superior view of the skull of *Creadion carunculatus*. (No. 18,289, Coll. U.S. Nat. Mus.) From the skeleton shown in fig. 9, Plate II., of the present paper (which see).
- Fig. 16.—Superior view of the skull of *Anthochaera carunculata*; mandible removed; adult. Same skull as shown in fig. 1, Plate I. of the present paper (which see).

PLATE IV.

- (The two figures in this plate are about one-seventh above natural size, and reproduced from photographs made direct from the specimens by the author.)
- Fig. 17.—Left lateral view of the skeleton of a specimen of *Vestiaria coccinea*. (Coll. U.S. Nat. Mus., No. 19,130.) See figs. 11 and 12, Plate III., of the present paper, where other views of the skull and mandible of this individual are presented. Right pelvic limb removed. Manus of right side broken off. Hyoidean arches removed, as well as the osseous portions of the larynx, trachea, &c. Ultimate vertebral rib of right side somewhat displaced.
- Fig. 18.—Left lateral view of the skeleton of a specimen of *Hemignathus procerus*. (Coll. U.S. Nat. Mus., No. 19,094.) See figs. 9 and 10 of Plate III. of this paper, where other views of the skull and mandible of this individual are presented. Right pelvic limb removed, also the hyoidean apparatus and the various ossifications of the air-passages. Otherwise this skeleton is remarkably perfect and well shown.

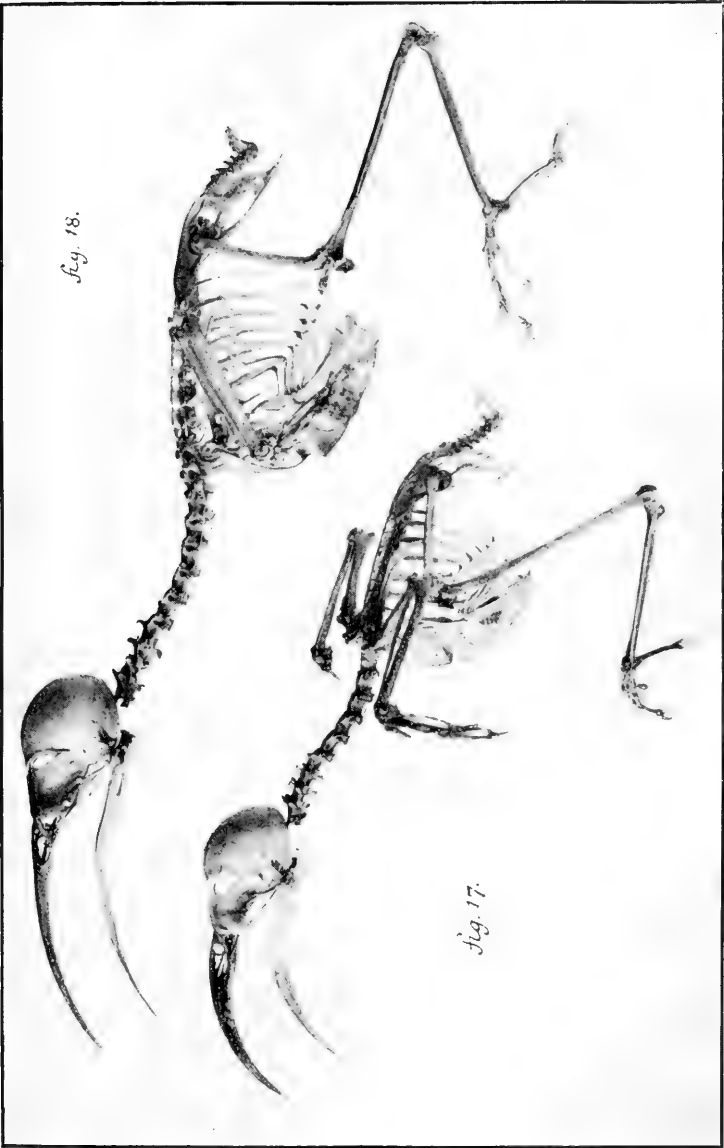






FROM A PHOTO. BY R. W. SHUFELDT.





FROM A PHOTO, BY R. W. SHUFELDT.



The Eggs of *Gymnorhina*, spp.

By A. F. BASSET HULL, R.A.O.U., Sydney.

THE eggs of the Australian Magpie (*Gymnorhina*, spp.) exhibit a greater variation in colour and markings than those of any other bird. Although amongst the eggs of the Guillemots, Terns, and Gulls great variation is found in ground colour and markings, there is a general similarity in the type, the variation consisting largely in degree of intensity of ground colour or quantity and disposition of the markings. The eggs of the Magpie differ in actual colour, class and disposition of the markings, shape, and size. At the same time these differences are not local, or the result of food or environment, nor are they, except as to size, known to exist in the units of a clutch or the successive layings of an individual bird. In the case of the sea-birds marked differences often exist between the separate units of a clutch, or, where the bird usually lays only one egg for a sitting (e.g., *Onychoprion fuliginosa*), and that egg is taken, the next laid varies markedly from the first. The Magpie, on the other hand, is consistent in that the units of a clutch are all of the same colour scheme, varying slightly only in the disposition of the markings and dimensions of the eggs, and the successive layings are of the same type. Further, the known extreme departures from the normal in the case of the sea-birds, such as the blue or red mutations of *Larus novæ-hollandiæ*, are very rare.

Taking No. 5 on the accompanying plate as a typical Magpie's egg, perhaps 50 per cent. are in this colour. The actual departures, not mere divergences from the type, are in overwhelmingly greater proportion than in the case of any other species.

The plate, produced from the originals by the three-colour process, illustrates a unit from each of nine separate clutches of the Black-backed Magpie's eggs (*Gymnorhina tibicen*, Latham). While a much greater number of specimens showing marked variations from type could be illustrated, these nine very fairly represent the chief variations ordinarily found. Similar variations are common to the other species of the genus—*G. leuconota* (Gray), *G. organicum* (Gould), *G. dorsalis* (Campbell), and *G. longirostris* (Milligan).

Is the remarkable variation in these eggs evidence of the gradual evolution of a fixed type?

I would invite observers to favour me, through this journal, with any interesting particulars relative to the eggs of this genus coming under their notice, and especially evidences of the persistence of a type in the successive layings of the one pair of birds.

The eggs shown on the accompanying plate, presented to the readers of *The Emu* by Mr. H. L. White, of Belltrees, form units of the following clutches:—

- 1, + 4, laid in captivity at Manly, N.S.W.
- 2, + 3, taken at Burrenbilla, Q.

- 3, +3, taken at Barnato station, near Cobar, N.S.W.
 4, +4, taken at Cobbora, N.S.W.
 5, +3, taken at Orange, N.S.W.
 6, +4, taken at Cobbora, N.S.W.
 7, +4, taken at Barnato station, near Cobar, N.S.W.
 8, +4, taken at Orange, N.S.W.
 9, +4, taken at Cobbora, N.S.W.

Field Ornithology in South Australia.

BY (CAPT.) S. A. WHITE, M.B.O.U., R.A.O.U., ADELAIDE.

THE GAWLER RANGES.

FOR many years the Gawler Range, with its strangely-formed hills, which start immediately to the west of Port Augusta and extend in a westerly direction for about 200 miles, has been a district of great interest to the ornithologist.

The late Mr. Stephen Hack was the first to explore this country, and after him Mr. Josiah Bonnin, at the head of a small party, traversed these ranges, and rode out beyond them to the west in 1862. The journal written by this gentleman was published in the "Proceedings of the Royal Geographical Society of Australasia (S.A. Branch)," vol. x., 1907-8. The account is very interesting, for Mr. Bonnin, being a very observant man, mentions the birds seen by his party. The first ornithologist, as far as I am aware, to work this country was, however, the late Mr. J. F. Andrews, who was one of my late father's collectors during his memorable voyage to New Guinea in 1880. Andrews made his headquarters at Nonning, and worked out from there into the spinifex-clad ranges. Seeing that he had to tramp nearly 200 miles from Port Augusta, carrying a pack, before reaching his headquarters, it can be understood that his work must have been sorely handicapped. Through the courtesy of Mr. Robert Zietz, Ornithologist to the Adelaide Museum, I have been able to read letters written by Andrews to the late Mr. Waterhouse (first Curator of the South Australian Institute). Andrews addressed his letters from Port Augusta, and states having sent on, amongst other birds, the skins of the Night-Parrot (*Geopsittacus occidentalis*), and for a trifling sum per skin. Evidently these birds were much more numerous then than they are now. In 1902 Drs. A. M. Morgan and A. Chenery, M.'s R.A.O.U., made an expedition into these ranges, but were retarded much in their collecting work by a severe drought then existing, which eventually drove them back.*

Eventually, on the morning of 22nd August, 1912, my wife and I started out from Port Augusta with high hopes. Our four-horse team, with driver and black boy, crossed the head of Spencer Gulf in the punt, and we were soon on the track, taking a southerly

* A small but very interesting collection of bird-skins was made by Dr. Morgan, and is now to be seen in the Adelaide Museum.



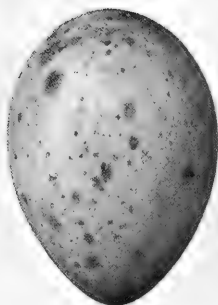
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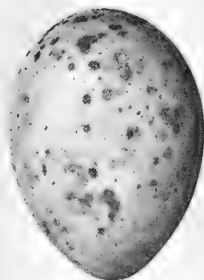
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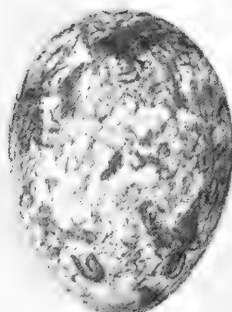
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Eggs of *Gymnorhina tibicen* (Latham).



course, and travelling down the Gulf. My reason in taking this route was owing to a wish to visit Mount Whyalla, which is the southernmost outpost of the Gawler Ranges. On this mount a bushman told me he had seen the Night-Parrot; another thing, I wished to continue through the new country round Lake Gillies. Having passed through a most peculiar gap in the ranges, which can be seen for many miles before it is reached, called Lincoln Gap, we made our first camp. Up to this we had travelled



Sketch Map of South Australia.

through a veritable flower-garden. Rain having fallen some little time before, all the country was bright with wild-flowers and green with herbage. We thought all this boded well for the future, and that we had visited the country at the right time. We were, however, to meet too soon with disappointment, for the further we went south the drier it became. On the second day we entered the district visited by my late father when he undertook the dangerous task of crossing the Gulf in a very frail boat, with a makeshift sail formed out of a blanket; this was in 1866 or 1867. See Gould's "Birds of Australia," Supplement, iv.,

for the description of Turquoise Wren (*Malurus callainus*), which my father discovered on this trip. Mr. A. J. Campbell also gives an account of this discovery in his standard work, "Nests and Eggs of Australian Birds" (vol. i., p. 171). Surely enough we met with this beautiful Wren again in the same locality. Now we entered country, as far as I know, never worked by an ornithologist, and we journeyed on to Mount Whyalla, where we camped for a while, working the country round the mount, but not a sign of the Night-Parrot did we notice. Nevertheless, many interesting species of birds came under observation. Still proceeding south, we left the myall and mulga country and entered the mallee. Here our troubles began. Water was very scarce, and at last we were compelled to double back and give up hopes of getting round Lake Gillies. The horses were suffering badly, and we were reduced to a few pints of water. We made for Iron Knob, but had to camp a few miles from it, for the horses could not accomplish the last few miles.

Next morning, early, our team slowly dragged us into Iron Knob. Imagine our disgust to find that we could not get a drop of water there for love or money. Hurrying off to Corunna with our jaded and thirsty team, we there found them water, and rested. From a botanical point of view this district was extremely interesting. Great variety of flowering plants was seen everywhere. We camped near a strange, detached range rising from the plain, in many places perpendicularly, from 800 to 1,000 feet—one mass of rugged, broken granite rock, crowned with low bush and scrub. Many of the ravines held larger timber. The south end of the range is cleft by a deep gorge, at the end of which is a nice spring of pure water that trickles down, and, from numerous chippings, this spring must have been a favourite camping-ground for the natives. After the horses had recovered we pushed south again, our intention being to pass round on the west side of Lake Gillies and pick up our tracks; but we did not succeed, for we struck the dry belt again, and returned to Lake Gillies tank, where we filled our water-bags and watered our horses. The next few days took us into the Gawler Ranges proper, striking the Western Australian telegraph line at Courcupidney, where it follows a long valley with picturesque hills on either side. This country impressed us as being very beautiful. The plain or broad valley, along which we travelled many miles, was covered with fine salt-bush and dotted with the beautifully shaped and drooping foliaged tree, the myall. Where dry watercourses were found the scrubby mulga (*Acacia rigens*) grew in clumps, and at the time of our visit was covered with a wealth of golden blossom; the sweet perfume from the flowers could be detected a long way off. On the slopes of the range patches of the quaint blue-bush were seen. These plants grow so evenly as to space between, as well as to height, that at a distance they resemble a vineyard. A little higher up patches of mulga grew, and still higher spinifex crowned the hills with low bushes, while the hop plant (*Dodonaea*

lobulata) was a mass of scarlet seed-pods, showing up in vivid contrast amongst the silvery seed-heads of the spinifex. On the plain we drove over acres of glorious "Sturt pea" (*Clianthus Dampieri*). This beautiful plant, when in full bloom, is beyond description. Amidst such scenes of beauty we moved on day after day, ever adding to our ornithological and botanical collec-



Blue-bush (*Kochia sedifolia*).

FROM A PHOTO, BY S. A. WHITE.

tions and notes. Winding and twisting amidst the picturesque hills, we were still going west. When crossing a spur and looking down the valley it appeared like a mass of gold, owing to the beautiful shrub, botanically named *Cassia artemisioides*, which flowers so profusely as to hide the foliage. The scent from these lovely bushes is the sweetest of all the flowers. Cattle are very fond of this shrub, and anywhere near a station the bushes are exterminated, and rabbits are helping to wipe it out, like many others, by their deadly barking process. Another shrub which came under our notice growing on these salt-bush plains, and which made good beds by cutting the tops off and piling one upon the other, was the kangaroo-bush (*Pholidia stoparia*). It bears a little, delicate, puce, bell-shaped flower, and seemed to afford much food for the honey-eating birds.

One morning, while exploring the summit of a high ridge, we caught sight of Lake Gairdner for the first time. The bright morning sun was glinting on the salt-encrusted shores. It bore N.N.W. Again we struck a dry belt of country, where no rain

could have fallen for a very long time. It was a trying time for our horses — water scarce and little or no feed. We at last struck good country again. What a transformation scene from the bare, parched, red ground to come on to a carpet of flowers. In places wild geraniums were up to the horses' sides. The welcome note of the Brown Song-Lark (*Cinclorhamphus cruralis*) was also cheering as we flushed the birds from the field of flowers. Again miles upon miles of a broad plain between two ranges was a perfect "garden of all sorts of pleasant flowers." Amongst the brightest were the golden-yellow immortelles, *Helipterum incanum* and *Helichrysum apiculatum*. Although small flowers, they were so massed as to resemble a veritable "cloth of gold," relieved by patches and bands of white flowers. Conspicuous amongst these were *Helipterum floribundum* and *H. corymbiflorum*. Again, an acre or so of "Sturt pea" would dazzle the eye with its scarlet splendour.

On our arrival at Yardea, our depot, we were much perplexed to find that our extra stores, which had left over a month previously, had not arrived; but, through the kindness of Mr. Bailey, part owner and manager, we were enabled to continue our journey next day, when we left the western end of the Gawler Ranges and plunged into a thick mallee scrub. This scrub was of the greatest interest, for, as far as I can tell, it starts well over the border in Western Australia, and, with a sweeping curve, ends abruptly at the western end of the Gawler Ranges. There is not the slightest doubt that several Western forms of birds have followed this belt of mallee by slow degrees eastwards till the end was reached. They could go no further, the country outside this belt of mallee being unsuitable for their existence. Among the big mallee our camp was formed, and we spent a few days collecting and making observations, which are dealt with later on. The days spent at this permanent camp were all too short. A few peculiar forms of plants came under notice, such as the flowering shrub *Olearia Muelleri*, the bright yellow-flowering, buttercup-like plant, *Zygophyllum apiculatum*, and the bush known as *Centipeda Cunninghami*, of repulsive odour. In damp situations a small grass-like plant, bearing a seed-pod in shape of a kangaroo tail, attracted our attention owing to its bright red colour; I believed it to be *Myosurus minimus*.

It was with regret that we left this camp and pushed on in a more north-westerly direction. Later, we were compelled to make in for stores. On reaching Yardea we were surprised to ascertain that our supplies were not to hand, but received information that the team was not many miles back on the track. We drove along the track, meeting the team on the second day, and took possession of the long-looked-for stores. From here we struck off the track in a northerly direction and worked the country on to Lake Gairdner. What a sight this big lake presents, with its miles of glistening salt, which at times was covered with a few inches of water in places! The shore-line is very indented, forming



Gawler Ranges: Typical Scene.
Salt-bush (*Atriplex*) in foreground, Myall (*Acacia*) in mid-distance.



Through Fields of Flowers.



many inlets and bays, and fine bold and lofty hills jut out into the lake, appearing at a distance like islands. Working the country well, we rounded the south end of the lake and turned up the east side, and after a few days made Wattaker station. We camped in a thick mulga scrub for a while, where bird-life was more plentiful than usual, but the wind blew with great violence, and hampered our work very much. Several fresh plants came under notice, such as *Gnaphalium luteo-album* and the pretty little *Athrixia tenella*, *Goodenia pinnatifida*, &c. From here we travelled in easy stages along the track, working the country on either side. At Myall Creek we found the Thick-billed Grass-Wren (*Amytornis modestus*) amongst the high salt-bush.

Our last night's camp was formed on the side of a table-topped mount, fairly high up on the lee side, hoping to get some shelter from the wind. All through our trip the wind had been very high, and gave us much trouble; but this night it blew with hurricane force, making it almost impossible to stand up against it. Towards morning the wind dropped, and a good fall of rain followed. Before dark, on this our last night, we clambered amongst the large boulders on the hill-side as well as we could against the wind, and, although we saw few birds (*Artamus melanops*, *Glyciphila albifrons*), some plants were noticed. One of them, a bright scarlet and pink flowering shrub, *Frankenia pauciflora*, was perhaps one of the prettiest in the north. Another bright-flowering species growing on the sheltered sides of large boulders was *Isotoma petraea*. Many acacias abound in this northern country. Most of them are of a prickly nature, but the one known as the "dead finish" excels all others in its fierce nature. Many birds build their nests in this shrub (*Acacia tetragonophylla*), knowing that by so doing their homes are well protected.

In concluding my remarks on the plant life, I must say that the most beautiful flowering tree of the Gawler Ranges is a hakea (*H. multilineata*). We met with some of these trees, covered with scarlet blossoms, growing on a sandy ridge to the west of the ranges. Making an early start on the last morning, we camped at Lake Dempsey for mid-day meal, and did some work amongst the *Calamanthus* around the lake, reaching Port Augusta West in the late afternoon. A gale of wind was blowing, driving sand before it in clouds, which the horses did not like facing. On reaching the punt the men refused to face such a wind and running sea, so my wife and I, after some inducement, got the ferryman to pull us over, leaving the team to come over at such time as the wind and sea moderated. Thus ended a trip of nearly 700 miles. Mrs. White's heavy boots had been torn to pieces by the rough, stony country invaded, and the last day or two she had to keep in camp for want of footwear, while our driver's feet were protected only by pieces of leather bound up by wire; his clothes were in tatters. My second pair of boots was almost done, and the knees were out of my breeches, &c., &c., while our

skins were tanned red, like the colour of the country we had passed over. This we counted as nothing when we looked back on our interesting trip and the work we had accomplished.*

The following is a list † of 75 species of birds (with notes) taken during the two months' (August and September) trip, which, by the way, included much ground not previously worked by an ornithologist:—

Dromaius novæ-hollandiæ. Emu.—Emus have been almost wiped out by the natives (aborigines), who are nearly all armed with rifles. Now and then a small party was seen, which consisted of 8 or 9 birds, on the plains to the extreme western end of the ranges.

Coturnix pectoralis. Stubble Quail.—Were not plentiful; the only place we saw them was near East Well, where a fair number was located in the big salt-bush. They were calling loudly in the early mornings, and just before sundown.

Podiceps gularis. Black-throated Grebe.—A few of these birds met with on the water-holes.

Podiceps poliocephalus. Hoary-headed Grebe.—These Grebes were more numerous than the Black-throated variety. Parties of 8 or 10 were observed at nearly all water-holes.

Zonifer pectoralis. Black-breasted Plover.—These handsome Plovers were met with on all the plains near water. At water-holes and dams we were sure of finding a pair or more, and on many occasions discovered their nests; clutch, four eggs invariably, and all heavily incubated. At some places the birds had hatched out their young.

Ochthodromus veredus. Oriental Dottrel.—One bird came under notice (a female). It was on a wide plain between two ranges. She was flushed from a bare patch of ground (red clay). The great extent of tapering wing arrested attention at once. The bird flew a few hundred yards and alighted again; it ran over the bare clay-pan with great rapidity.

Ægialitis nigrifrons. Black-fronted Dottrel.—One specimen was procured near a water-hole at Donald's Plain, western end of the ranges.

Ægialitis ruficapilla. Red-capped Dottrel.—An odd bird or two seen near water-holes, clay-pans, or dams.

Œdienemus grillarius. Southern Stone-Curlew.—These birds were heard at night, but not often. It is too evident that the fox is exterminating these interesting birds.

Notophoxyn novæ-hollandiæ. White-fronted Heron.—Single birds or pairs were seen near water-holes, dams, &c.

Nettion gibberifrons. Grey Teal.—Met with a few Teal on dams and water-holes.

* I am indebted to Mr. H. H. D. Griffith for identification of botanical specimens. Four have been described as new to science by our well-known botanist, Mr. J. M. Black. Also to Mr. A. M. Lea, F.E.S., for working out stomach-contents of birds.

† The names are in accordance with those of the R.A.O.U. "Check-list," as specially requested in *The Emu*, vol. xii., p. 290. I wish, however, to state that I believe the strict law of priority should prevail, and that trinomials should be admissible.

***Spatula rhynchotis*.** Australian Shoveller.—A fine male of this species was found in a deep dam, and had apparently mated with two female *Nyroca australis*. Stomach contained quantities of very small insects found near the margin of the water.

***Nyroca australis*.** White-eyed Duck.—Two females were found in dam with the preceding species. Stomachs contained great quantities of a species of large water-beetle, procured by diving.

***Uroaëtus audax*.** Wedge-tailed Eagle.—Eagles were very few; poison has nearly cleared these noble birds out of the district.

***Hieracidea berigora*.** Brown Hawk.—Met with these Hawks on many occasions. They seem to be thinly dispersed through the ranges, as well as over the surrounding plains. On the 21st of August, 1912, we discovered the first pair nesting; they had taken possession of a Crow's nest, placed in a gum-tree growing in a dry water-course, and about 60 feet from the ground. The male was upon the nest, and allowed us to walk round the tree and throw sticks and stones at the nest before being dislodged. Nest contained three eggs, slightly incubated. On 16th September found a nest in a myall tree, about 15 feet from the ground; the female sat very closely on three eggs, heavily incubated. Insects play a large part in the diet of these birds; many small lizards were also found in their stomachs. They are rapid of flight, and utter a harsh and discordant cry.

***Ninox* (? sp.) Owl.**—A bird of this family came under notice one day in a thick myall. It seemed to differ from *N. boobook* in having much more white upon the breast. Unfortunately, we were unable to secure the bird, so the doubt of its identity was not cleared up.

***Cacatua leadbeateri*.** Pink Cockatoo.—We did not observe these birds till we reached the south-western end of the ranges, although we had seen their crests in the head decorations of the natives. They were feeding in large flocks on bare ground, and when alarmed they took flight with great screeching, but alighted again soon. They often alighted on a dead tree, which they covered in such a mass as to give the appearance of cotton wool. Strangely, many of these birds were in the worst possible stage of moulting, yet some birds in fine plumage had paired prior to nesting. One nest was taken in a white gum growing on a flat amidst the mallee belt. The hollow was 40 to 50 feet from the ground, and contained three fresh eggs.

***Barnardius zonarius*.** Yellow-banded Parrot.—We were much surprised to meet with these Parrots just after passing through Lincoln Gap, for we had no idea that this bird had worked as far north. Reliable old residents assured us that it was only within the last few years that these Parrots had been seen in the district; yet it has come to my knowledge that Mr. J. W. Mellor procured this bird in the same year, and somewhere about the same time, at Port Germein, showing that the bird must have flown over the Gulf and is pushing northward. We found these birds rare amongst the ranges, but, when we entered the mallee belt, which extends from the Western Australian border and ends abruptly at the south-western end of the ranges, the birds were seen assembled in numbers amidst the large mallee to nest. We were rather early, and just before we left this interesting piece of country they had started to clean out their nesting-hollows, making a great fuss the while. The male would pose in all attitudes—hang head downwards, swing from under the

limb (where his mate was busy scraping out decayed wood and bark), his tail oscillating energetically from side to side, and all the while making an outrageous chattering call. On 7th September, we took a full clutch of four eggs from a very large mallee, about 20 feet from the ground, eggs slightly incubated and laid on the bare wood-dust. On the following day, just before leaving, we visited a nest which we cut open on the 5th (to find the nest ready to lay in); this time there were two eggs.

Psephotus pallescens (Salvadori). Pallid Yellow-vented Parrot.—Although we met with this species in numbers round Port Augusta the year before, we saw only an odd pair or two during this trip. Found one nest, with four young slightly covered in dusky down; nest was made in the hollow bole of a sandalwood tree nearly on the level of the ground, although the entrance was about 12 feet up.

Psephotus multicolor. Many-coloured Parrot.—This bird was met with only in the scrub a few miles from the shores of Lake Gairdner. Many larvæ of a gall-forming insect, with parts of galls, and two kinds of seeds, found in stomach:

Podargus strigoides. Tawny Frogmouth.—A few Frogmouths were seen, but at no time were they numerous. One was found nesting in a myall in the centre of the ranges, and on flushing the bird (a male) two eggs were found, slightly incubated. A few days later two fully-fledged young were discovered sitting on either side of a parent bird in a myall;

Cuculus pallidus. Pallid Cuckoo.—These Cuckoos were observed in numbers all along our route. Strange to say, there were as many females, if not more than males, in this country; but in the same months—*i.e.*, August and September—last year, at the other end of the Peninsula, about 300 miles south, great numbers of males were met with (see *Emu*, vol. xii., p. 2). We procured a number of specimens, and cleared up all doubt as to the variation in plumage. We are quite sure that the female never at any time takes the plumage of the male, and, what is more, I am of the firm opinion that the female never makes the prolonged scale-like call. She very seldom utters a note; when she does so it is a harsh, short cry, repeated two or three times. One specimen, when shot, deposited an egg upon the ground where she fell. The egg was pure white in colour. We saw no trace of these birds' eggs in any nests which came under our notice. Some days we met with great numbers, and they appeared to be travelling south.

Chalcococcyx basalis. Narrow-billed Bronze-Cuckoo.—Very few of these birds were seen during our trip—not more than 5 or 6. Contents of stomachs, hairy caterpillars.

Hirundo neoxena. Welcome Swallow.—A few noted near stations and homesteads.

Cheramœca leucosternum. White-backed Swallow. — These Swallows came under notice on two or three occasions. The first time, at No. 2 camp, quite a large colony was very busy cleaning out tunnels, which were made in the side of a sandy bank of a dry water-course. No eggs were yet laid.

Petrochelidon nigricans. Tree-Martin.—Seen at Donald's Plain.

Petrochelidon ariel. Fairy Martin.—Observed several times, and at Corunna they were building their retort-shaped nests on the side

of a mass of rocks, near the water. Many nests were finished, but none contained eggs.

Microeca assimilis. Allied Brown Flycatcher.—Met with in pairs on the edge of scrubs at times; not at all plentiful.

Petroica goodenovii. Red-capped Robin.—Wherever sufficient scrub was found to form cover these birds were observed, and on all occasions they were remarkably tame, allowing us to approach within a few feet of them. They had paired, but had not apparently started to nest; this, no doubt, was owing to the very rough weather experienced at the time.

Melanodryas bicolor. Hooded Robin.—These Robins were met with on the plains to the south of the ranges, and were thinly dispersed through the hilly country. They were in pairs, but not nesting.

Oreoica cristata. Crested Bell-Bird.—Bell-Birds were observed on the plains and through the ranges alike. Wherever a little scrub afforded shelter they were sure to be found. Their beautiful note is a characteristic of the country, and the first blush of dawn is the signal for these birds to call. They procure most of their food on the ground, hopping over the stones and sand after the fashion of the *Colluricincla*. Many nests were seen, mostly containing eggs, and none without the ordinary adornment of hairy caterpillars in a torpid state. The reason these insects are placed in the nest is a mystery. Stomach contents:—1 larva of moth, 4 small larvæ of moth, fragments of large fly, two kinds of seeds.

Pachycephala rufiventris. Rufous-breasted Whistler.—Whistlers were met with in pairs occasionally, both in the ranges and on the plains. The colouration of all birds which came under notice was very pale—many shades paler than the birds found further south.

Pachycephala gilberti. Gilbert Whistler.—Was very plentiful through the ranges; its loud and clear note could be heard at some distance. It seems to be very pugnacious, for it was often seen attacking much larger birds, and, although we did not see a nest, from its restless manner and loud calling nesting time must have been close handy. When we re-discovered *P. rufogularis* last year (see *Emu*, vol. xii., p. 180), I remarked upon its distinct call, and was told by more than one ornithologist that it was their opinion that *P. gilberti* made the same call. I am now in the position to affirm my first statement, for we listened to dozens of *P. gilberti* calling at different times, and never once did we hear a note resembling that of *P. rufogularis*. We found *P. gilberti* to be great ventriloquists.

Rhipidura motacilloides. Black-and-White Fantail.—Few of these familiar birds were seen. Dr. A. M. Morgan is of the opinion that these birds differ from those down south. Not having procured a specimen, owing to my reluctance to kill one, prevents my passing any decided opinion.

Rhipidura albiscapa. White-shafted Fantail.—We met with this bird only on one or two occasions in the thick mulga scrub.

Seisura inquieta. Restless Flycatcher.—These Flycatchers were noticed but once on this trip, and that was near Donald's Plain, our attention being drawn to a pair of birds by their strange note.

Graucalus melanops. Black-faced Cuckoo-Shrike.—Were thinly scattered over the ranges and plains alike; no sign of nesting.

Cinclosoma castanotum. Chestnut-backed Ground-Bird.—Met with these birds at the extreme western end of ranges and on Donald's Plain. In the mallee a nest was discovered, situated in a depression in the ground, close against a fallen mallee. The nest was constructed of strips of bark and a few dry straws. The female sat very closely on two eggs. She allowed my wife almost to tread upon her. The bird's colouration harmonized so wonderfully with the dead timber and bark that it was difficult to detect her.

Cinclosoma cinnamomeum. Cinnamon Ground-Bird.—A pair of these rare birds was met with on the side of a spinifex-covered hill near the shores of Lake Gairdner. One bird ran with great rapidity under an acacia bush, and stood perfectly motionless to avoid detection, and when flushed alighted under another bush and squatted in the dead leaves.

Pomatorhinus supercilliosus. White-browed Babbler.—This bird was one of the most numerous met with. Specimens were seen everywhere—out on the plains and in the hills, even up to the top of the highest mount. Hundreds of nests are built by these birds and they do not seem to lay in 10 per cent. of them. Judging by the restless nature of these birds, one would think that they built nests for lack of something better to do. We found these birds sitting on clutches of two to five eggs, and in one instance flushed a bird from a heavily incubated single egg. Many birds found out on the clay country had their feathers stained such a deep red that one would imagine at first sight that they were of a distinct species. Stomach contained three larvæ of moths.

Calamanthus campestris. Field-Wren.—It is interesting to note that Gould received the type of this species from the Port Augusta district. We met with this bird all through the ranges, where it keeps to the big salt-bush, and is seldom flushed, passing from bush to bush (with feet just touching the ground and outstretched wings) with great rapidity. One nest was found, composed of dry grass and strips of bark from the salt-bush. It was placed on the ground under a dead branch of a salt-bush; dome-shaped, rather depressed on top, and with the opening to the north. Nest contained two naked young. The nest was only glanced into to see the contents; but in less than an hour the birds had pulled the nest to pieces and carried every particle away. After these birds had destroyed their home, what we took to be the male bird perched upon a dead salt-bush and sang with such excitement that he nearly lost his balance—a most unusual performance for these birds when danger is near.

Ephthianura albifrons. White-fronted Chat.—A few birds were met with on the south side of the ranges, but they are not so numerous as they are down south.

Ephthianura tricolor. Tricoloured Chat.—Thinly dispersed through the ranges—that is, the open timbered flats between the hills. They seem to prefer a flat dotted over with myall or mulga to the open plains. These birds were not nearly so numerous during this trip as they were north-west of Port Augusta the season before. The stomach contents of one bird was—two beetles (*Forcicomus quadrimaculatus*), one narrow plant-bug and two ladybird beetles (*Coccinella transversalis*).

Ephthianura aurifrons. Orange-fronted Chat.—We met with fair numbers of these pretty birds, mostly out on the salt-bush plains

They were just starting to nest: They were found nesting freely by Dr. Morgan at the south end of Lake Torrens 14 days before we left Port Augusta, so they were much later nesting in this country. Stomach contents of one bird—fragments of weevil (probably *Polyphrades*), three plant-bugs (*Gentellevidæ*).

***Acanthiza uropygialis*.** Chestnut-rumped Tit.—This Tit was numerous throughout the ranges, and in great numbers round the shores of Lake Gairdner; they were nesting freely. We took eggs on the 9th of August, 1912, at the south-east end of the Gawler Ranges, incubation well advanced; while nearly a month later we took fresh eggs on the shores of Lake Gairdner, several hundreds of miles to the north-west. The favourite nesting-site was in the hollow boles of dead trees, and we often found them placed in a hollow log lying on the ground, clutch consisting of three or four; and the nest is constructed of dry grasses (often clover), lined with feathers. The birds are most restless in their habits, always on the move, with a quick, hopping movement, uttering a bright little twittering note as they search over the ground or in the bushes for insects. Sometimes they would break out into a plaintive little song:

***Acanthiza chrysorrhoa*.** Yellow-tailed Tit.—Mr. G. M. Mathews has named this *A. chrysorrhoa adenda*, and I agree with him that the yellow on rump is of a shade quite different from that of the type of *A. chrysorrhoa*. We found this bird in the Port Augusta district the season before. On this trip we met with these dainty little birds on several occasions. They were moving about in quite large parties, although it must have been close to their nesting-time. They are lively birds, and hopped over the ground and through the low bushes with great agility, uttering a sharp little note, and at times a pleasing little warble.

***Pyrhrolæmus brunneus*.** Redthroat.—The Redthroat is distributed throughout the ranges. We found it out on the salt-bush plains as well as in the hill country. Its shy habits and mouse-like movements when alarmed are very consistent wherever found, and are identical with the *Sericornis*.

***Malurus callainus*.** Turquoise Wren.—This beautiful bird was of the greatest interest to us, and when I procured the first specimen I was much moved by memories of the past. In 1865 my late father, the intrepid ornithologist and explorer, discovered this gem in bird-life not more than 30 or 40 miles from this very spot, and it was from one of two specimens then secured that John Gould described the new species in his "Supplement to the Birds of Australia," part iv., 1867, in which the author remarks:—"That this gentleman may again visit the home of this species and obtain the female is my ardent wish . . . and I have no doubt he will do so; for I have reason to believe that no one of my many correspondents in Australia is more keenly alive to the interest which attaches to our favourite branch of science—ornithology." However, the late Samuel White did not return to the haunts of this bird; but 47 years later his son and his daughter-in-law did, and procured specimens of both sexes. The first of the Turquoise Wrens met with was after passing through Lincoln Gap. We had camped for the night, and in the early morning we passed over a flat covered in large salt-bush, around which were some fine bushes of scrubby mulga (*Acacia rigens*), and from out of them darted a small party of Wrens, seemingly

some females and immature males. They flew into the giant salt-bush and disappeared in an instant, and they could not be dislodged again, although we could hear their faint little notes of alarm. Returning to this spot later in the day, this party of Wrens was surprised, and we procured a fully adult male, some immature males, and a female, which proved to be *Malurus callainus*. Several days later, further south, on the edge of the mallee (this mallee country extends right down past Port Lincoln), we again came in touch with this feathered gem, and this time they were in a large party, but very shy. A dry watercourse, the bed of which was covered with deep, coarse, loose sand, was fairly well covered for five or six hundred yards in width with "scrubby mulga." These bushes were in a mass of blossom, and their thick, drooping foliage gave good shelter to the Wrens. They darted from bush to bush in follow-my-leader fashion. When one broke cover the others followed. Sometimes a beautiful male would perch on the top of a bush, display or extend his glorious mantle, utter a short trill, then dart to cover again. There was no salt-bush for some little distance, therefore I am of the opinion that this bird favours low, thick scrub, and that it takes to the salt-bush, if near, only to hide when hard pressed:

Again *Malurus callainus* came under our notice on our return journey just before leaving the ranges. Again we found it amongst the scrubby mulga bushes growing in a water-course between two ranges. Dr. Morgan found this bird nesting about this time—i.e., September, 1912—at the south end of Lake Torrens, but we saw no signs of nesting. This is owing to early rains falling at the southern end of Lake Torrens, and Dr. Morgan informs me that the very strong gales which we experienced during the whole of our trip were not felt further north.

Malurus morgani (White), sub-species of *M. assimilis*. Morgan's Wren (see *Austral Avian Record*, vol. i., No. 5, p. 126).—I at first took this bird for *M. assimilis*, but, on comparing, I find it has a distinct shade of blue on the crown of the head, and that the ear coverts are of a much lighter shade. This is consistent in all specimens procured, and on comparing skins made by Dr. Morgan some few years before, in the Gawler Ranges, I find that they are the same. I consider this to be a good sub-species.

Malurus cyanotus. White-winged Wren.—This white-winged beauty was met with on the salt-bush plains, but seldom, if ever, found in the ranges. For 30 miles round Port Augusta, in the salt-bush country, these little birds were very numerous, but as we worked south, parallel with Spencer Gulf, we lost them, and *M. callainus* took their place. Heading north again, we picked them up at the northern end of Lake Gillies, but not in any numbers. They were again observed on our return journey north of the ranges, always out on the salt-bush plains. We did not see any indication of nesting, although Dr. Morgan found them breeding at the south end of Lake Torrens during September.

Amytornis modesta. Thick-billed Grass-Wren.—Both Mrs. White and our man (Thos. Ash) informed me they had seen a brown, skulking bird in the salt-bush, and, calling to me, showed where it had disappeared. We spent hours trying to make it break cover, without success. It was not till we were on our homeward track, and had reached Myall Creek, that we were fortunate enough to

procure an adult specimen and two young birds walking through the salt-bush near the dry water-course. Two brown birds scuttled away from under our feet, and after searching for some time they were found sitting closely together, and quite motionless, under a bush; they were fully fledged young. On making a squeaking noise one of the parent birds answered, and after some time was lured from cover into the open and procured. These birds so resemble their surroundings in colouration, are so cunning and such skulkers, that it is the greatest difficulty to sight them. They will almost let you crush them underfoot before they will betray their presence.

Artamus personatus. Masked Wood-Swallow.—On one occasion only did we meet with these birds; that was in the centre of the ranges on 15th September, 1912—a day to be remembered, for the wind had been blowing with great force for many days, but on that day it seemed to excel in energy. Although we were camped under the lee of a steep spur in thick mulga scrub, it was almost impossible to light a fire or keep a duck tent from tearing to pieces. In a gully close to our camp we came upon a vast host of these birds, sitting on the ground or holding tightly to the lower branches of the mulga to try and escape the terrific wind as much as possible. No doubt they were migrating prior to nesting, and had been forced to take shelter from the elements.

Artamus melanops. Black-faced Wood-Swallow.—This *Artamus*, which my father, the late Samuel White, discovered at St. A'Becket's Pool in August, 1863, was not found to the south-east or south of the Gawler Ranges. After passing through Lincoln Gap, which is to the south of Port Augusta, this species disappeared, and *A. sordidus* became more plentiful. I doubt very much if this bird has a wide range south-west, and would put the south-west end of the ranges as its extreme limit. We came upon these birds about 40 miles west of Port Augusta, in the low ranges, where they had just commenced to nest, for on 17th September we took a nest with three fresh eggs; nest constructed of loose sticks, and placed in the thickly-forked branches of a shrub, about 4 feet from the ground. In habits this species resembles the other members of the genus; call also is the same, and the characteristic wagging of the tail from side to side while uttering their plaintive note is very pronounced. Contents of one stomach were—one larva of moth, remains of grasshopper, remains of beetle, two ants (? sp.), one ant (? sp.), ant (*Odontomachus corearius*)—this ant was never found before in South Australia), one ant (*Camponotus nigriceps*), 10 seeds (? sp.) of one kind.

Artamus sordidus. Wood-Swallow.—The common Wood-Swallow has a great range. We met with them all through the trip. On 13th September we noticed the first nest, which contained three fresh eggs; they had just started to build. Occasionally these birds surprised us with their sweet twittering song, not unlike that of the Welcome Swallow (*Hirundo neoxena*), only louder.

Colluricincla rufiventris. Buff-bellied Shrike-Thrush.—Wherever there was sufficient scrub for shelter we met with this fine bird. Observations proved that they procure much of their food on the ground, over which they hop in an exceedingly sprightly manner. The call does not compare with that of *C. harmonica* for body or melody.

Corcorax melanorhamphus. White-winged Chough.—The curious

Corcorax was only seen in the interesting belt of mallee at the south-west end of the ranges, where a small colony of 6 or 8 birds came under notice. A nest of the usual mud type was found placed on a horizontal branch 50 or 60 feet from the ground, in a white gum (a few of these trees were found on the flats amongst the thick mallee). The nest contained three eggs; incubation well advanced; date, 7th September, 1912. The long-drawn, loud, and mournful call of these birds sounds most weird amidst the silence of the bush. Their strange hopping movements when on the ground or passing from branch to branch, often with the wings partially extended, are very noticeable.

Aphelocephala leucopsis. Whiteface. — Whitefaces were noticed everywhere—upon the vast salt-bush plains, in the myall and mallee scrubs, amidst the great boulders of granite outcrops, and in rocky gorges—sometimes in small parties and at others in pairs. They were nesting in hollow trees, cracks in the rocks, in abandoned nests of the *Pomatorhinus*. We found fresh eggs, also fully-fledged young. When moving about the birds were continually uttering a low, chirruping note. We kept a sharp look-out for Gould's *A. pectoralis*, but never saw a bird to resemble it. I am of the opinion that there was some mistake in the locality from which he procured the type. One stomach contained leg of grasshopper and part of plant-bug (*Gentilelridæ*).

Neositta pileata. Black-capped Tree-runner.—Noticed these birds once during the trip, at the south-east end of the ranges. A small party was very busy looking for food amongst the black oaks. Their shrill, chattering call drew our attention to them; they seem invariably to make this chattering call when on the wing.

Climacteris rufa. Rufous Tree-creeper.—We had not penetrated that interesting belt of mallee already described 20 yards before this fine bird was seen creeping up the bole of a giant mallee, and the next few days' observation proved that they were very numerous. We felt sure they must be nesting, but could not flush a bird from a hollow, so sat down and took a bird each under observation. In half an hour one flew to a nest (after trying every ruse to decoy us—flying away in a most unconcerned manner, but returning, hopping about on the ground as if nothing troubled, &c.) At first it passed in and out of all the hollow spouts but the one where the nest was. At last the female entered one and did not come out, and on investigating we found the nest. Subsequently we must have discovered about 15 nests. Unfortunately, all contained very young birds or heavily-incubated eggs; date, first week in September. All must have started to nest about the same time. The "old man" mallee trees at Donald's Plain, affording so many hollows, were ideal places for Tree-creeper to nest in. This bird's favourite nesting-site is in a leaning tree, especially leaning away from the prevailing winds, which are south-west. No rain ever enters the hole. The opening to the nest is generally about 7 feet from the ground (but we saw some 10 to 15 feet), and the nest proper is usually 4 to 5 feet down, and consists of soft bark placed on the decayed wood, with a few feathers as a lining, and sometimes a little opossum or rabbit fur. The clutch varies from one to three eggs, but most two. The call, although distinctly Climacterine, is more feeble than others of the genus; also, more time is spent on the ground hunting for food than I have observed with other members of this family. The examination of

the stomach contents reveals a variety of ants. The following are the contents of one stomach:—About 150 small caterpillars, one small cockroach, 36 small ants (*Iridomyrma*), 4 large ants, one sugar ant (*Camponotus nigriceps*), 23 green-headed ants (*Ectatomma metallicum*), one head of ant (possibly *Pomera lutea*), one part of ant (not enough for identification).

[Mr. Mathews has described the eggs of the foregoing species under the name of *C. rufa orientalis*. *Vide Austral Avian Record*, vol. i., No. 8, p. 196.—EDS.]

Climacteris superciliosa. White-browed Tree-creeper.—Met with these birds at the south end of Lake Gairdner, amongst a dry, scattered mulga scrub—one of the driest and most miserable pieces of country we saw during the trip. Saw four birds only in many miles of this country travelled through round the shores of the lake. Their call is much louder, and the birds do not take to the ground so much as *C. rufa*. They were under observation for some time, while we were searching for their nest, and they showed no desire to look for food on the ground as did *C. rufa*, but hopped along fallen trees in the true Climacterine jerky fashion.

Zosterops dorsalis. White-eye.—*Zosterops* were very scarce. Once or twice in the scrub their plaintive note was heard, and the birds seen hopping about amongst the low scrub and salt-bush.

Dicaeum hirundinaceum. Mistletoe-Bird.—Wherever mistletoe appeared throughout the ranges, this little bird was found, or its sharp, piercing call heard amongst the myall scrub. In some places there was hardly a myall that had not a large mistletoe suspended from its branches.

Pardalotus striatus. Red-tipped Pardalote.—Found wherever a few gums were growing, generally in the water-courses; but the birds were not numerous. At Yardea head station a pair of these little birds nested in the stone wall of an outhouse.

Glyciphila albifrons. White-fronted Honey-eater.—A few were met with on the south side of the ranges, but were so wary that we could not identify them; but later on, when returning further north, we found quite a number amongst the low shrubs that grew on the banks of dry water-courses. One of their chief feeding plants is the very pretty tree fuchsia (*Correa speciosa*), and from its many-coloured flowers the birds seem to collect quite a quantity of honey and insects. They have the true *Glyciphila* zig-zag flight, and utter a sharp, loud note. The very strange habit of darting about with outstretched neck and the body swaying from side to side, so common to other members of the genus, is also very marked in this bird. Stomach contents:—Three small bees (heads and parts of abdomen).

Glyciphila fulvifrons. Tawny-crowned Honey-eater.—Rarely seen on the trip. The bird's absence is no doubt due to the want of undergrowth and bush country. On the edge of the mallee, down south, we met with it here and there, and its long-drawn, mournful cry was heard several times.

Ptilotis sonora. Singing Honey-eater.—This very familiar bird was met with at both ends of the ranges, but I doubt whether it is numerous in the hills themselves, where we saw one or two solitary birds. A few pairs were nesting at the eastern end in the low shrubs which marked the course of a stony creek running out upon the

salt-bush plain. The nests contained from two to three eggs, all fresh. Although this bird's ordinary call is melodious, it has also some short harsh and discordant notes. It is very inquisitive, and when its curiosity is aroused the antics it goes through at times are very ludicrous.

***Ptilotis ornata*.** Yellow-plumed Honey-eater.—This graceful little bird was met with at Valley Well and on Donald's Plain—at the former place in some stunted gums growing in the dry water-course, and at the latter in the mallee, where it was very plentiful.

***Ptilotis plumula*.** Yellow-fronted Honey-eater.—Mr. Mathews has made this bird from the Flinders and Gawler Ranges a new subspecies. I agree with him. We met with these birds on many occasions in the ranges. They are very silent birds, and unlike many other members (I may say nearly all) of the genus in their quiet, silent, and retiring habits. They seem sociable, and were often observed in parties of from 8 to 10. They apparently keep to the ranges; never once were they seen in the mallee or away from the hilly country.

***Myzantha flavigula*.** Yellow-throated Miner.—Wherever a few eucalypts grew this Miner was found, and in places numerous. We found it breeding in many localities in the ranges.

***Anthochæra carunculata*.** Red Wattle-Bird.—The Wattle-Bird was seen first on Donald's Plain. We discovered a few trees of the gorgeous "bottle-brush" (*Hakea multineata*) growing on a sandy ridge, and amongst other birds frequenting their lovely pink blossoms was the Red Wattle-Bird.

***Acanthogenys ruficularis*.** Spiny-cheeked Honey-eater.—This is one of the most (if not the most) familiar bird of the vast northern country. Wherever a bit of scrub is found surely these birds are there. How often is the death-like silence which reigns amidst the hills broken by the strange guttural and gurgling notes of these birds! Stomach contents, one bird:—Fragments of at least two kinds of weevils, and 8 seeds, of the same kind.

***Anthus australis*.** Ground-Lark.—Met with this bird during the whole of the trip.

***Corvus coronoides*.** Australian Crow.—Crows seen in many places, but were very difficult to approach. A few specimens were procured; one had the base of feathers perfectly white.

***Cracticus destructor*.** Collared Butcher-Bird.—A few Butcher-Birds were noted, but they were not at all numerous.

***Gymnorhina leuconota*.** White-backed Magpie.—Quite a number of Magpies were seen all through the ranges. Some are of the opinion that these birds were introduced of late years into the Gawler Ranges. I do not believe this possible, for they are too numerous and widely distributed.

New Cuckoo Foster-Parent.—During last season I received from my friend Mr. R. Walton a set of two eggs of *Eopsaltria australis*, and one egg of *Chalcococcyx plagosus*, which were taken during November at Ringwood, Victoria. *Eopsaltria australis* is, I believe, a hitherto unrecorded foster-parent for this Cuckoo.—F. ERASMUS WILSON. Melbourne, 2/6/13.

Bird-Life of Kow Plains (Victoria).

BY L. G. CHANDLER, R.A.O.U., MELBOURNE.

(Read before the Bird Observers' Club, 18th December, 1912.)

WHEN Mr. Henry L. White, of Scone, New South Wales, offered to pay my expenses during a collecting trip to the North-West of Victoria I gladly accepted. For years I had desired to visit "The Mallee." I had heard Kow Plains spoken of as a fine district for bird-life, and decided to try my luck there. I was accompanied on the trip by my father, Mr. R. C. Chandler, who ably assisted me in my work.

Leaving Melbourne on 19th August, 1912, we arrived at the railway siding at Kow Plains on the afternoon of the following day. After getting our paraphernalia together, we shouldered as much as we could carry, and "made tracks" for the Kow Plains homestead, which was to be our headquarters for the next few days. The heavier luggage was left on the platform, to be picked up by a cart from the homestead in the evening. We noticed that miles of country between Ouyen and Kow Plains had been swept by bush-fires. All this country has been selected, and a portion of it is under wheat, which looked in a promising condition when we passed through. The mallee between these stations consists principally of short saplings, and if we expected to find birds numerous we were disappointed. As mile after mile passed by, sometimes without the sign of a bird, we began to wonder whether the statements regarding the abundance of bird-life in the Mallee were not greatly exaggerated. We were soon to learn that only certain species frequent this dense sapling mallee, the majority of the birds keeping to the more open and taller timber.

Kow Plains is situated about 350 miles from Melbourne and 30 miles from the South Australian border. The first objects to attract the eye of the traveller when nearing the siding at Kow Plains are the white copi hillocks on the north side of the line. These hills consist of pure gypsum. We found this powder superior to plaster of Paris for cleaning the feathers of birds. Surrounding these hillocks large salt-bush plains support such birds as *Ephthianura*, *Calamanthus campestris*, and *Malurus leucopterus*. To the south of Kow Plains the country for several miles consists of undulating ground, crossed at intervals by sand-ridges, running almost due east and west. Many of these ridges are covered with Murray pines and belah (*Casuarina*), but the principal vegetation is mallee (*Eucalyptus*), with an undergrowth of porcupine grass (*Triodia*), and, in parts, dense thickets of "broom-bush," tea-tree, and turpentine-bush. Here and there the mallee (*Eucalyptus*) is covered with a heavy growth of parasitical dodder. Between the ridges mallee of varying height predominates, interspersed with turpentine-bush, myall, and different species of acacias. As one nears the desert the face of the country alters considerably. The reddish-coloured sand merges into a pure

white sand; the Murray pine degenerates into a dwarf scrub-pine; and tea-tree and species of heath take the place of the turpentine-bush. The mallee (*Eucalyptus*) here is stunted in growth, but in places the porcupine grass (*Triodia*) grows luxuriantly, both on the sand-ridges and in the valleys.

By 24th August we had a supply of provisions from Murrayville, a township nearer the South Australian border, and the next day our belongings were carted to a bore, $4\frac{1}{2}$ miles south-east of Kow Plains. The tent was soon pitched in a snug position, and everything made comfortable for the night. Our intention was to stay here for a week only, but a few days' investigation proved bird-life to be so abundant and varied that we decided to make a permanent camp. The first morning's ramble in the Mallee is one that will linger pleasantly in my memory for years. The mallee was in blossom, and consequently the honey-eating birds were present in thousands. The music of the birds was wonderful. Our camp was situated on a pine ridge in virgin country, and every morning we were awakened by the singing of the birds.

I will now proceed to deal in order with the habits of the birds noted during the trip. I have included only those species which were met with in the Kow Plains district.

Dromaius novæ-hollandiæ. Emu.—Although this bird was not seen, fresh tracks were noticed at Kow Plains, and also further south, on the desert. A resident told me that his dog had chased two Emus off the plains only half an hour before I met him.

Leipoa ocellata. Mallee-Fowl.—Judging by the large number of old nesting-mounds which were found, these birds must have been exceedingly numerous at one time in the district. About a dozen new mounds were examined, but, as the season was late, no eggs had been laid by the birds up to the time of our departure (16th October). The first six mounds were situated thus—No. 1.—In "broom-bush" and mallee, on sand-ridge, partly open on south side; acacia leaves had been swept up in straight line from beneath a bush which was fully 22 yards from mound. No. 2.—In "broom-bush" on top of sand-ridge, and open on west side; noticed a large amount of the bird's droppings in the mound. No. 3.—Mound among "broom-bush" and turpentine, on slope of sand-ridge; closed in all round; "broom-bush" and mallee principal *débris* in mound. No. 4.—Situated on slope of sand-ridge among stunted pine, mallee, and turpentine-bush; open on east side. No. 5.—In dense tea-tree and "broom-bush" thicket, on slope of sand-ridge; open on south-east and south-west sides. *Débris* swept up from a distance of 25 yards in one narrow track when first seen; later, the birds added vegetable matter from all around the mound; acacia leaves largely used. No. 6.—Very poor mound, in stunted mallee and porcupine grass (*Triodia*), on slope of sand-ridge. Open on south side. Clump of porcupine grass growing alongside mound; mallee leaves and bark largely used. Both birds were disturbed from this mound one wet afternoon.

We frequently saw these birds in our daily rambles, and in many cases one would feed, while walking away from the intruder in a

stately manner, without evincing the slightest fear. At other times a bird would rise with a cry of alarm, and, with rapidly-beating wings, skim away. The favourite haunt of this species is among the turpentine-bush. In the season the seed of this bush forms its staple diet. The crops and gizzards of two specimens dissected were crammed with this seed. A species of yellow fungus, which attains large dimensions in the sandy soil, is also eaten at times. Any palatable insect finds favour with the Mallee-Fowl, and the young shoots of shrubs are eaten. In the turpentine tracts one is often attracted by scratchings in the soil, which resemble those made by a rabbit. These holes are scratched out by the *Leipoa* when in search of ants, grubs, and so forth. After a careful examination of the ground about a mound, it is safe to assume that the birds use their wings to a large extent when sweeping the *debris* into the mound. I took a photograph beneath an acacia, in which the wing-markings can be clearly seen in the sand. A glance at a specimen of this species shows that the curved wing is specially adapted for sweeping. One of the specimens obtained had frayed quill-feathers, proving beyond doubt that the birds use the wings for this work. The male bird has a cooing, trisyllabic note, which was often heard when the bird was near the female.

Geopelia tranquilla. Ground-Dove.—A single specimen of this species was secured. Apparently a rare bird in the district.

Phaps chalcoptera. Bronze-winged Pigeon.—Although by no means common, this species was well distributed. A nest was found on top of a deserted Babbler's (*Pomatorhinus superciliosus*) nest.

Zonifer pectoralis. Black-breasted Plover.—My father found a nest of this bird, containing fresh eggs, near the edge of a wheat-field. We visited the nest early on the following morning, but eggs and bird had disappeared, with the exception of a few bits of broken shell and feathers. There were tracks of a fox in the sand. This species was fairly numerous in the limestone country around Kow Plains.

Ædienemus grallarius. Southern Stone-Curlew.—Heard calling on one occasion.

Choriotis australis. Bustard.—My father reported having seen a fairly fresh track of this species, about a mile north of the railway line. A settler informed us that a solitary bird had been seen on several occasions north of Kow Plains. Several persons had been after it with guns, but they could not get near to it.

Notophox novæ-hollandiæ. White-fronted Heron.—A single bird was observed near our camp one day.

Chenopsis atrata. Black Swan.—A flock of Swans passed over our camp one evening (20th September), flying in a westerly direction.

Anas superciliosa. Australian Black Duck.—Two of these birds were disturbed at the water-hole at Skeleton Hut, on the fringe of the desert.

Phalacrocorax melanoleucus. Little Pied Cormorant.—A single bird was observed at the pool frequented by the Ducks.

Astur approximans. Australian Goshawk.—Only a pair of these birds was seen during the trip, and the nest was found, ready for eggs, on 14th September. By 15th October no eggs had been laid, but a few green mallee leaves had been added to the lining of the nest.

Accipiter torquatus. Collared Sparrow-Hawk.—Two nests, ready for eggs, were found about a week before we left the district, but no eggs had been laid up to 15th October. Each of these nests was built in a Murray pine and lined with green eucalypt leaves.

Uroaëtus audax. Wedge-tailed Eagle.—This fine species is very rare in the district, and only old nests were observed. One nest had evidently been tenanted in the previous season.

Hieracidea berigora. Brown Hawk.—Three nests of this species were seen. On several occasions, just at dusk, a bird would fly swiftly through the timber, uttering loud cries. After this performance the following day would invariably be windy and stormy.

Cerchneis cenchroides. Nankeen Kestrel.—A rare bird ; seen only on two or three occasions.

Ninox boobook. Boobook Owl.—Seen and heard in five places. The bird in the Mallee calls more rapidly than its representative in Gippsland forests.

Glossopsitta porphyrocephala. Purple-crowned Lorikeet.—Wherever the mallee gums approached any size suitable for nesting purposes, these handsome little birds were seen in dozens. Nests were found in every stage. Some contained fresh eggs, while others held incubated eggs and young. Any convenient hollow is made use of, and nests were observed at heights which varied from 5 feet to 40 feet. It was noticed that from nearly every nest which contained eggs, if the tree were tapped in the late morning or early afternoon, two birds were flushed. While the breeding season was in full swing the male birds of this species congregated in the mornings and feasted on the nectar in the mallee blossom.

Cacatua leadbeateri. Pink Cockatoo.—A bird well distributed, and a number of nesting-hollows were found. A curious coincidence which we noted about the nesting of this bird was that a nest of *Barnardius barnardi* was invariably found in the same or an adjacent tree. This bird has keen ears, and will slip off the nest when one is 50 yards or more away.

Cacatua roseicapilla. Rose-breasted Cockatoo.—A flock of "Galahs," about two dozen birds, was observed on a few occasions on the plains, at the end of August and early in September. Later, the birds disappeared, possibly to nest further north.

Platyercus eximius. Rosella.—My father one day reported that he had seen a pair of birds of this species about a mile north of the railway line.

Barnardius barnardi. Ring-necked Parrot.—A number of nesting hollows of this species were chopped out. With a few exceptions, they contained either an incomplete clutch or were being cleaned out preparatory to egg-laying. This Parrot is noisy when about the nest.

Psephotus multicolor. Many-coloured Parrot.—This magnificent bird was fairly plentiful, and several nests were chopped out, which were ready for eggs. Two nests contained respectively four and five eggs to the clutch. In a hollow stump a brood of five young birds was found a few days before we broke camp. About a foot below the Parrots' nest, in the same hollow, a marsupial mouse had made her nest;



Nest and Eggs of Southern Frogmouth (*Podargus rossi*, Mathews).

FROM A PHOTO. BY L. G. CHANDLER

Lathamus discolor. Swift Parrot.—On 9th September a flock of Swift Parrots passed over our camp, flying in an easterly direction.

Podargus rossi. Frogmouth.—Except when a nest was located, this bird was rarely seen. The majority of nests found were built on a horizontal fork of a small sapling. I succeeded one day in taking a photograph of a *Podargus* on its nest. The bird took no notice of the noise made by the camera shutter.

Ægotheles novæ-hollandiæ. Owlet-Nightjar.—Numerous hollows, from which these birds were flushed, were chopped into before nests containing eggs were obtained. Often tapping at the foot of a tree will not dislodge the inmate, but should one scratch on the trunk of the tree, in imitation of a climbing lizard, the bird will leave hurriedly.

Haleyon pyrrhopygius. Red-backed Kingfisher.—One day a settler stated that he had shot a bird for us which was an entire stranger to him. It proved to be a specimen of this species. Later a bird was obtained several miles from this place.

Merops ornatus. Australian Bee-eater.—The first Bee-eaters were heard calling on 24th September, and after that date the birds began to arrive in flocks. No nesting operations had been started up to the time of our departure.

Eurostopodus guttatus. Spotted Nightjar.—One day we flushed a pair of these handsome birds from the foot of a mallee sapling. Hoping to find the nest later on, we left them undisturbed. A week later this strip of mallee was being rolled, and the birds were not seen again.

Cacomantis flabelliformis. Fan-tailed Cuckoo.—Found throughout the district, but by no means common. No Cuckoo eggs were taken on the trip.

Mesocallius ocellans. Black-eared Cuckoo.—On 21st September about twelve of these birds were seen. They had evidently just arrived in the district, and were selecting mates.

Chalcococcyx basalis. Narrow-billed Bronze-Cuckoo.—Seen and heard calling on several occasions.

Chalcococcyx plagosus. Bronze-Cuckoo.—A rare bird. Its plaintive whistle was heard only on one occasion.

Hirundo neoxena. Welcome Swallow.—A pair of Swallows had a nest under the verandah at the home station.

Petrochelidon nigricans. Tree-Martin.—Well distributed in the tall timber. Several nests were noted in inaccessible positions. One nest, which I chopped out, was ready for eggs. I carefully blocked the hole which I had made, and a week later secured a set of four fresh eggs. The nest was composed of mallee leaves. One tree contained the nests of three pairs of birds.

Micræca assimilis. Allied Brown Flycatcher.—A common species. All the nests noted were built close to the ground.

Petroica leggii. Scarlet-breasted Robin.—Noted on two occasions, but specimens were not secured.

Petroica phœnicea. Flame-breasted Robin.—Three female birds were observed—one bird on the plains, and the other two several miles south-east of Kow Plains. A specimen was obtained on 9th September, 1912.

Petrolea goodenovii. Red-capped Robin.—A rare bird south of the railway line. Specimens noted among Murray pines had well-developed young flying.

Melanodryas bicolor. Hooded Robin.—Numerous in the open timber bordering the plains, and well distributed elsewhere. I was directed to a nest one day which contained two young ones. On the following day I took the camera along to photograph the nest and nestlings, but the birds had vanished. As on many other occasions, a Raven (*Corvus australis*) was possibly responsible for the disappearance of the brood.

Smicrornis brevirostris. Short-billed Tree-Tit. — Exceedingly numerous throughout the district. Although a sharp look-out was kept for their nests, none was found.

Rhipidura albiscapa. White-shafted Fantail.—A very rare species. Two specimens were secured, which bear a great similarity to the Western form, *R. preissi*. The Mallee appears to be the eastern limit for many of the Western aviforms.

Rhipidura motacilloides. Black-and-White Fantail. — Common. One bird visited the camp daily, and would enter the tent in quest of flies.

Seisura inquieta. Restless Flycatcher.—Although often seen, by no means a common bird.

Graucalus melanops. Black-faced Cuckoo-Shrike.—Large flocks of these birds arrived at Kow Plains at the end of August. By the middle of October they had paired off, but had not started nesting operations.

Campephaga humeralis. White-shouldered Caterpillar-eater. — A single male specimen was obtained. No other birds were observed. A call of this species resembles "Peter-pete." The "Peter" is repeated about half a dozen times.

Cinclosoma castanotum. Chestnut-backed Ground-Bird. — Often met with in sapling mallee. We had an interesting experience with a female of this species. A nest was found on 26th September at the foot of a mallee sapling; it contained two young birds. When the nestlings were handled the female came within 3 inches of us as we knelt on the ground. At short intervals, while running round us, the bird emitted a puffing sound, like that made by wind being blown through pursed lips. A nest containing incubated eggs was obtained near the end of September. These birds are fond of working over ground where there has been a recent fire.

Drymodes brunneopygius. Scrub-Robin.—This species may be numbered amongst the few Mallee birds which show little fear of man. By imitating the call notes one can decoy a bird to within a few feet of where one is standing. The principal calls resemble "Chip-pip-er-ee," "Chip-pip-ee," and "Chip-peer-a-peat." These notes are varied, and are sometimes uttered in a low key, the effect being ventriloquial. Another note, used largely as a call-note, is a long-drawn-out whistle. A note of alarm and distrust sounds phonetically "Charr-rrr, tuk-er-tuk-ertuk-ertuk," the "tuk-er-tuk" portion being produced rapidly. This species is well distributed, and is especially numerous where the turpentine-bush and acacia grows. The Scrub-Robin is one of the last birds to begin calling in the morning. The male will mount a favourite perch—in every case

an exposed limb, well above the scrub, often a dead Murray pine or acacia—and repeat its calls, with slight variations, for some time. Presently he will give the drawn-out note several times, as a signal for the female to join him, and fly to the ground, still uttering this call. Often the female does not appear until her mate has secured something edible; then an extra appeal on his part brings her from the nest or nesting-site, answering softly as she approaches, “Coo-yeer, coo-yeer.” At times this drawn-out note is also used as a warning to the female. Both birds will now work over the ground together, the male emitting, at intervals, some of the calls previously mentioned, and frequently feeding his mate. In from 10 to 20 minutes the birds begin to feed back to the starting-point. It is at this stage that the male bird proves himself a past-master in the art of decoying. Leaving his mate in a sheltered position, he suddenly flies across an open space, for a distance, perhaps, of 20 yards, uttering the scolding notes of distrust and doing everything possible to make one follow him. The female, in the meantime, slips unnoticed to her nest by a series of short, low flights.

With great difficulty I followed a female bird one day for fully 25 minutes. She ran behind a turpentine-bush, and the male bird appeared on the other side about three seconds later. I thought at the time that he was 40 or 50 yards away, at my back. The female had vanished. Curiously enough, following on this clever performance, the male, after mounting to a lower limb of a pine tree and calling “Chip-pip-ee,” several times, flew straight to where his mate was concealed. The female utters many of the male bird’s notes, but in a subdued tone. Both sexes assist in constructing the nest. A shallow hole is first made in the ground, possibly by the bird turning around. Short, thick sticks are next placed in position around this hole, and, finally, bark. A lining of rootlets or fine twigs completes the nest. Many nests are built against the fallen branch of a tree or a bush. In this case the outer edge of sticks is built on three sides only, with a marked extension on the side opposite the branch. Although, as mentioned, this species appears to exhibit little fear of man, the birds resent anyone watching them building the nest. Two nests which I found building were deserted, presumably on account of my remaining too long in the vicinity. By systematic search I was fortunate enough to find the new nests of both pairs of birds. I visited one nest, which was nearly completed when I first saw it, five days later. I could see that it was deserted, and spent some time searching for the second nest, but without success. I returned on the following day, and, after a short search, found the nest, which contained a fresh egg.

The female will allow one to approach within a few feet before she starts from the nest. It is a certain sign that a nest is not far away should a female be noticed regarding one intently—without moving—for several minutes. Unlike her mate, the female does not practise to any extent the art of decoying. The birds make little demonstration while an intruder is at the nest. The female will approach to within a few feet and look inquiringly into one’s face. When first disturbed she may utter a scolding note, but after that remains silent. Should the stranger retire a few paces, she goes to the nest fearlessly. After the examination of a large number of nests, old and new, it was found that the favourite situation was on the ground, under a turpentine-bush. Other nests were placed—also on the ground—among *débris* at the foot of mallee saplings, “broom-

bushes," &c., while in a few cases the nest was built a few inches off the ground, on a heap of sticks. Several old nests were found in the area frequented by a pair of birds. The Scrub-Robin moves over the ground in a succession of runs and hops, and has a habit of flicking the wings and tail at times much like a *Petroica*. The bird, when feeding, reminds one of the Ground-Thrush (*Oreocincla lunulata*). It has the same quick action in tossing the earth aside with its bill when after a grub, and jumping back, with apparent nervousness, before renewing the attack. A small white grub, which they are very adept at extracting from the ground, is one of the chief items of diet. On one occasion I saw a bird fly about 2 feet into the air and capture a passing insect. A curious habit which this species has, when perched, is to glance at the ground below it with its head first on one side and *vice versa*, as though watching an insect. While perched the tail is often raised and lowered with a slow motion. One nest was found containing a newly-hatched chick. The chick is born naked and blind, with skin of a dark brown colour; gape cream.

Hylacola cauta. Red-rumped Ground-Wren.—This little songster looks very pretty as it hops perkily over the ground, with tail erect. The nest is hard to find. One nest contained three fledgelings.

Pomatorhinus superciliosus. White-browed Babbler.—Very plentiful. Nests in all stages were noted. One pair built several nests near our tent. The first nest, which they deserted after much chatter, was built a few feet from the tent door, and was situated amongst branches which had been placed in position as a breakwind. I thought that the notes of this bird were slightly different from those of the same species in the Melton district, Victoria.

Calamanthus campestris. Field-Wren.—On the salt-bush plains surrounding the copi hillocks, north of the railway line, a few pairs of birds of this species were observed. Mr. Gregory Mathews has described a bird from this locality as *C. howei*. The birds are extremely wary, and I had trouble to secure a specimen. Judging by the condition of one specimen which I dissected, the nesting period would have begun about the end of October.

Cinclorhamphus cruralis. Brown Song-Lark.—A single bird observed north of the railway line.

Ephthianura albifrons. White-fronted Bush-Chat.—Noticed in different localities. A nest ready for eggs was found in a salt-bush, but a week later it had vanished, together with the birds.

Ephthianura aurifrons. Orange-fronted Bush-Chat.—Half a dozen pairs of birds of this beautiful species were noted in the salt-bush country a few days before we broke camp. A nest containing eggs was found on the ground in a salt-bush. It contained two eggs when first seen, and a set of three eggs was taken later. The male bird was flushed off the nest on both occasions.

Acanthiza pygmaea. Fairy Tit-Warbler.—While having dinner one day at the dam at Skeleton Hut—a sheet of water about 8 miles south-east of Kow Plains railway station—we were attracted by the strange notes of some birds in a pine tree above our heads. I secured three specimens, and concluded that the species was *A. nana*. A few days previously my father had noticed a pair of these birds among some open timber on Kow Plains. This bird—since described as a new



Nest and Eggs of Orange-fronted Bush-Chat (*Ephthianura aurifrons*).



Nest (*in situ*) of Rufous-rumped Ground-Wren (*Hylacola cauta*).

sub-species by Mr. A. W. Milligan (*vide Emu*, vol. xii., p. 167)—was only observed on these occasions.

Acanthiza pyrrhopygia. Red-rumped Tit-Warbler.—This rare bird was occasionally seen. It frequents the low mallee, and moves rapidly from branch to branch when feeding. On account of the lateness of the season, the species had not started nesting operations by the middle of October. We heard a bird imitating the calls of the Fan-tailed and Bronze Cuckoos in a low tone.

Acanthiza uropygialis. Chestnut-rumped Tit-Warbler.—In the Murray pine forests we frequently met with this species. The birds were observed in small flocks in September, but had split up into pairs by October. Three nests, ready for eggs, were found about the middle of October. In each case the nest was placed in a hollow stump or tree.

Acanthiza chrysorrhoa. Yellow-tailed Tit-Warbler.—Fairly plentiful in the district.

Pyrrholaemus brunneus. Redthroat.—A rare species. Has a pleasing song.

Malurus melanotus. Black-backed Wren-Warbler.—Plentiful among the turpentine-bushes. Most of the male *Maluri* noted during the trip did not regain their nuptial plumage until October. None of the Wren-Warblers had started to nest.

Malurus cyanotus. White-winged Wren-Warbler.—A pair of these birds was seen in the salt-bush, the male in immature plumage. This species has a very distinctive note:

Malurus assimilis. Purple-backed Wren-Warbler.—This elegant bird was often seen in company with *M. melanotus*, and the two species appeared to be on friendly terms.

Amytornis striata. Striated Grass-Wren.—I spent a considerable amount of time in the porcupine-grass (*Triodia*) tracts, systematically searching for the nest of the Grass-Wren, but it was not until within a few days of leaving the district that I found two nests containing eggs and a nest in course of construction. The nests were well hidden in the heart of porcupine grass, and could be seen only by looking closely into the clump. I saw an *Amytornis* one day apparently of a uniform brown colour. Although I visited this locality frequently, I did not see the bird again.

Artamus superciliosus. White-browed Wood-Swallow.—A large flock of Wood-Swallows passed over the camp on 9th September, flying in an easterly direction. They stopped for a few minutes in a flowering mallee, and were busy extracting the nectar from the flowers. The flock was composed of *A. superciliosus* and *A. personatus*. A week or two later a flock of these birds settled near camp to nest. Within a few days nests were to be seen on top of every available stump.

Artamus personatus. Masked Wood-Swallow.—See note to previous species.

Artamus sordidus. Wood-Swallow.—A stationary species. Specimens were observed when we arrived at Kow Plains.

Colluricincla harmonica. Grey Shrike-Thrush.—One of the first things to attract our attention was the marked difference in the notes of this bird when compared with the notes of the species around

Melbourne. I felt convinced that an examination of the two types would prove the Mallee bird to be a new species. However, Mr. A. J. Campbell, to whom the skins were submitted for comparison, states that they do not differ in plumage. Several nests were found.

Grallina picata. Pied Grallina.—Rare; two or three pairs observed.

Gymnorhina tibicen. Black-backed Magpie.—A common bird. Several nests were found each containing two eggs, and one which held three heavily-incubated eggs. A number of hybrids between *G. tibicen* and *G. leuconota* were seen at different times on the plains.

Gymnorhina leuconota. White-backed Magpie.—Rare. See note to previous species.

Cracticus destructor. Collared Butcher-Bird.—Another bird whose notes differ slightly from those of the Southern form. All the nests noted were built in Murray pines.

Oreoica cristata. Crested Bell-Bird.—Building; nests of the Bell-Bird, in course of construction, were found about the middle of October, and also nests containing young.

Pachycephala meridionalis. Southern Whistler.—On any ridge where the mallee or tea-tree was covered with a growth of parasitical dodder we met with specimens of this bird. At the same time, the species is by no means plentiful. The nest in every case was placed in dodder. On one occasion a male bird was found breeding in immature plumage.

Pachycephala rufiventris. Rufous-breasted Whistler.—The beautiful song of this bird was heard at times. It is a *rara avis* among the *Pachycephala* of Kow Plains.

Pachycephala gilberti. Gilbert Whistler.—A common form. Several nests were built on old Babblers' (*Pomatorhinus superciliosus*) nests. The male bird assists in building the nest, and also in the work of incubation. The bird is very tame. *P. gilberti* has a variety of notes. Those which are freely used resemble "Rath-u, rath-u" and "U-rath, u-rath." A note sometimes given sounds phonetically like "Ice-cream."

Pachycephala rufogularis. Red-throated Whistler.—One day (20th September), while on the fringe of the desert, in some porcupine grass (*Triodia*), I heard the call of a Whistler which resembled slightly that of *P. gilberti*, but still was distinct. I raced through the porcupine grass at full speed, for the call of the bird was growing fainter. Presently, about 80 yards ahead, I caught a glimpse of the bird, and was satisfied that it was larger than *P. gilberti*. For three or four minutes I followed it, guided by the call, through dense sapling mallee and porcupine grass. Suddenly I saw the form of a bird move in the leaves of a mallee sapling ahead. I took a quick snapshot, and a few seconds later had the pleasure of handling a perfect male specimen of *P. rufogularis*. The next thing was to find the female bird and nest; but, although often in this neighbourhood, I never obtained another glimpse of this rare species.

Eopsaltria australis. Yellow-breasted Shrike-Robin.—One morning we heard a bird-call a few times about a quarter of a mile from camp, which sounded exactly like notes uttered by this bird. A close search failed to reveal further evidence.

Aphelecephala leucopsis. Whiteface.—Common on the plains.



Nest of Striped Honey-Eater (*Plectorhyncha lanceolata*).

Neositta pileata. Black-capped Tree-runner.—Found in the pine forests. Small flocks of from six to a dozen birds were sometimes seen.

Climacteris scandens. Brown Tree-creeper.—Abundant. The Tree-creeper spend much time hopping on the ground.

Zosterops dorsalis. White-eye.—On one occasion a small flock of these birds was observed feasting on the nectar from the mallee blossoms.

Pardalotus striatus. Red-tipped Pardalote.—A very common species. Dozens of nests were found in hollow trees, but it was too early for eggs. Both sexes assist in constructing the nest.

Pardalotus xanthopygius. Yellow-rumped Pardalote.—Over a dozen nesting-tunnels of this species were opened out, but, with two exceptions, it was too early for eggs. The bird is similar to *P. punctatus* in its habits and calls.

Melithreptus leucogenys. Western Brown-headed Honey-eater.—Common. One nest, ready for eggs, was found in a mallee sapling on 8th October. A week later the nest was pulled about and the eggs were lying broken on the ground.

Plectorhyncha lanceolata. Striped Honey-eater.—A common species. These shy birds frequented the pine forests to a large extent, and their nests were found suspended at the ends of pine branches. They made a great din in the morning, and their noisy notes were often heard through the day.

Glyciphila fulvifrons. Tawny-crowned Honey-eater.—These birds were seen in hundreds, and their sweet notes were heard on all sides. While searching for nests of the *Amytornis*, dozens of old nests of this species were found in the porcupine grass, and a few new nests.

Glyciphila albifrons. White-fronted Honey-eater.—Very common. The favourite situation for the nest of this songster is among the dead growth at the foot of a clump of dwarf mallee. Nests were also found in the porcupine grass and in turpentine-bushes.

Ptilotis sonora. Singing Honey-eater.—Occasionally seen on the plains. One call of this bird resembles a note of *P. leucotis*.

Ptilotis novæ-noriæ. Western White-eared Honey-eater.—A common bird in the district I mistook it for *P. leucotis*, but Mr. A. J. Campbell places it as the Western form. I could trace no difference in the notes of this bird, and the nest is similar in every respect to that of *P. leucotis*. The eggs appear to be smaller. They are pugnacious birds, and savagely drive any intruding bird from the vicinity of the nest.

Ptilotis cratitia. Purple-gaped Honey-eater.—The favourite haunt of this species is among a species of dwarf acacia. All the nests which we found were situated in this acacia. *P. cratitia* is a noisy bird. It constantly utters a chattering call. About 200 yards from camp the birds were exceedingly numerous in the blossoming mallee.

Ptilotis ornata. Yellow-plumed Honey-eater.—This is the common Honey-eater of the Mallee. The birds are to be seen literally in thousands. Dozens of nests were found, in most cases situated in the mallee leaves.

Ptilotis penicillata. White-plumed Honey-eater.—A few days before we left the district I saw a species of *Ptilotis* building a nest

near the homestead at Kow Plains, and subsequently obtained four specimens. The birds are lighter in colour than a typical *P. penicillata*, and the legs and feet are more slender. Two of the specimens are male birds, and several yellow feathers extend beyond the white plume in both. The notes appeared to differ also from those of *P. penicillata*.

Meliornis novæ-hollandiæ. White-bearded Honey-eater.—On 23rd August a flock of these birds, numbering several dozen, was observed, and odd pairs were often seen during the trip. The notes of the Mallee bird differ from those of the *Meliornis* around Melbourne.

Myzantha melanotis. Black-eared Miner.—We found this species very plentiful in the dense sapling mallee south-east of Kow Plains. They search for their food on the ground, to a large extent, and, after feeding in one place for a few minutes, fly through the scrub for 50 or 100 yards before settling again. On a few occasions I watched individuals searching for insects under the bark of mallee saplings. One of the farmers brought me a set of two eggs of this species the day before we broke camp, but they were too heavily incubated to make into specimens. Up to this time the majority of the birds was still in flocks.

Myzantha flavigula. Yellow-throated Miner.—A few pairs of birds of this species frequented the open timber on Kow Plains. On 14th October a nest was found containing newly-hatched young, and a nest in course of construction was noted.

Anthochæra carunculata. Red Wattle-Bird.—Common. A remarkably shy bird.

Acanthogenys ruficularis. Spiny-cheeked Honey-eater.—These noisy birds were observed in hundreds. Most of them were preparing to nest about the middle of October. Two pairs nested close to camp, in mallee gums. I watched one bird nest-building. The female alone was doing the work. The male frequently flew near her while she was flying to and from the nest. In the intervals he would perch in a pine tree, close to the nesting-site, and utter his gurgling notes. At times he made a curious flight into the air, emitting a loud chattering call the while, then floated on outstretched wings back to the pine tree. Perhaps on his return he would savagely chase a Graceful Honey-eater out of the neighbourhood.

Anthus australis. Australian Pipit.—Fairly numerous on the salt-bush plains.

Corvus australis. Raven.—Common. Several nests containing two young birds were examined.

Strepera melanoptera. Black-winged Bell-Magpie.—This bird, although well distributed, was not common. It is very shy, though there are exceptions to the rule. We often disturbed a bird feeding on the ground in thick mallee. It would rise hurriedly and fly away, uttering its musical notes. Nests containing eggs, and in various stages of building, were found. The height of the nest from the ground varied from 15 feet to 35 feet.

Corcorax melanorhamphus. White-winged Chough.—Common. A nest was found composed wholly of cattle droppings. Under one nest I noticed a hole in the ground; the birds had undoubtedly used



Nest and Eggs of Yellow-plumed Honey-eater (*Ptilotis ornata*).



Nest and Eggs of White-fronted Honey-eater (*Glyciphila albifrons*).



the earth from this place to build the nest. As there was no water in the vicinity, they must have moistened the earth with saliva.

On 13th October we broke camp at the bore, and made a temporary camp at Kow Plains. We left for Melbourne three days later. Our thanks are due to the residents of the district for the kindly manner in which they assisted us in our work. I must also thank Mr. A. J. Campbell for his help in naming a few of the birds with which I was not familiar. All the birds, eggs, and nests collected during the trip are in the collection of Mr. Henry L. White, Belltrees, New South Wales.

Field Notes on Some Rallinæ.

By (Miss) J. A. FLETCHER, R.A.O.U., SPRINGFIELD (TASMANIA).

AN ornithologist passing through this district and viewing it superficially would probably consider it an unprofitable field for investigation. My closer association, however, shows it to be otherwise, its varied bird-life being intensely interesting, but in this paper I shall confine myself to a few remarks upon the Lewin or Slate-breasted Rail and Crakes.

The swampy growth of some of the marshy depressions appears to be a stronghold of these birds, and I have identified the following:—Slate-breasted Rail (*Hypotaenidia brachypus*), Spotted Crake (*Porzana fluminea*), Little Crake (*P. palustris*), and Spotless Crake (*P. immaculata*). Of the first-named my sister and I found many nests, but all nests found of the others were either afterwards deserted by their owners or perhaps robbed by snakes, which haunt these swamps, and add somewhat to the excitement of field-work.

Whilst searching through one of these places, towards the end of October, I came upon a small saucer-shaped nest in the centre of a reed-clump. The nest was composed of tiny pieces of reeds bitten into lengths. It was old, and traces of water-rats were in it. The same day I also discovered two nests under drooping clumps of grass. They resembled miniature Native-Hen (*Tribonyx*) nests. Footprints of birds were visible in the mud, and also tracks or runs through the reeds and cresses. No birds were seen, and subsequent visits showed the nests untouched. On the afternoon of 4th November my sister and I were sitting on the bank watching the swampy creek, which lay some 5 feet below us. A Crake call rung out, and presently a pair of birds was seen quietly feeding on the cresses. I turned the glasses on them, and saw that they were the Spotless Crake, their bright red eyes glancing to and fro. Soon afterwards we heard a "purring" sound, and noticed another bird close under the bank with a black chick following her. We saw her pull a grub from the bank and give it to the little one. After a while another chick came into view. The little ones were

black, with blackish beak, and appeared to have a few white spots on the back. The hen wandered further on, then gave some grunting sounds before she led the baby birds over an open space of shallow water. They crossed this in an attitude of fear, and one little fellow was in such a hurry that he struck a stick, and thus turned a complete somersault in the water. At his cry of alarm the mother rushed back, and the glasses confirmed my opinion that she was a Little Crake (*P. palustris*). After they had gone we searched the swamp, and my sister found a new nest of a Crake, exactly similar to the one of bitten reeds. No eggs were ever seen in it.

Later on, in November, whilst watching for birds in the same creek, though higher up, I saw a Crake with three young. The mother made a noise resembling water pouring from a bottle, whilst the chicks answered "Peep peep," and kept close to cover, only running to their mother when she grunted and apparently fed them. She glanced up at a white moth which settled on a reed, saw me, and the family disappeared. I could not make out whether she gave the chicks insects or pieces of the cress amongst which she was searching. So far I have had no other opportunity for studying the life-history of the Crakes. Several times the Spotless Crake was flushed from a nest it had made, and in which it was fond of sitting towards evening. I never saw eggs in this nest, and I have come to the conclusion that this was a dummy nest, and that perhaps the real one was a little further away. Two other nests were found, but apparently robbed. Bush-rats also frequent these swamps and live in the many logs which intersect the morass. The female of the Spotless Crake whilst running makes a noise like the "puff, puff, puff" of a motor-car. In fact, I have been asked the proper name of the little "motor-car birds." The male answers with a squeaky grunt.

I had more success with the Lewin (Slate-breasted) Rail. These birds begin their sentinel calling early in August, and any intruder near the swamp is warned off by a loud metallic "Tick, tick, tick." I observed that in the early morning and towards evening they generally feed near their nests, and the calls then are a very good guide to its locality. Should the female be on or near the nest when the male calls, she will answer with a noise resembling the deep purring sound of a cat. As soon as the rustling reeds betray the presence of an intruder she slips off her nest and is away. Several times, though, the bird hid at the foot of the nesting clump and once against my sister's boot. I could not discover if both birds assisted with the nest-building, though I gained some idea of the time taken in its construction, unless the birds have been robbed, when they rapidly construct another home, generally only a few yards away.

On the 18th August a partly made nest was found with the slightest attempt at an overhead covering. Near was last year's nest, containing egg-shell fragments, and also the skull of a Rail upon it. A week later more material had been added and the

working tracks were showing plainly in the reeds. By 31st August two eggs were laid, and the clutch completed in two more days. This bird laid her eggs at mid-day; so did another which nested in the school swamp. I took the clutch above, and the birds rebuilt a few feet away and reared their brood.

This swampy creek was a great resort of these Rails, and about a mile further down its course four other nests were found with full clutches. The nests were placed in tussocks, and their heights ranged in position from a foot to 3 feet above the water or mud. One nest was placed 4 feet high in a tangle of reeds and dead branches. Under this nest was another lower down, and a Wren also built in the same clump. Were all inhabited at once?

A swampy creek runs through the play-ground, and, in spite of the noise of the school children, it is a great haunt of the Rail and Spotless Crake. The latter was flushed many times, and three nests were found, but they were either not used or were pillaged. The Rails nested freely, and one was found sitting on five eggs in a clump not 5 feet from the edge of the play-ground, which runs to the swamp. In fact, when playing hide-and-seek, some scholars hid close to the bird, and several times when a cricket ball was lost I have been afraid the searchers would unwittingly destroy the home. I broke one of the eggs, and reckoned the hen had been sitting four days, so, allowing three weeks for incubation, I concluded the chicks would be out by 7th November. This bird was remarkably tame, and would stay on the nest whilst the reeds above her were parted, and twice allowed her back to be touched. All was well until the 3rd of November, when some creature stole two eggs, but she continued sitting. The evening the chicks were due to be hatched I looked at the nest, but the eggs were cold. I left them, and a few days afterwards broke one. It contained a fully-developed chicken with the beak in a position to chip the shell. The tiny creature was clothed in black down; its bill was black, and it had greyish-white legs. I returned to the nest for the other egg, but it had gone. Twenty days afterwards a second nest was found near, and the hen was sitting on five eggs.

Another bird I watched was incubating two eggs, but these were found to be addled. The bird left them of her own accord. Yet another pair successfully hatched a brood in a nest built in a gutter by the wayside, just 3 feet from the road, down which a constant stream of traffic passed.

Occasionally Slate-breasted Rails are met with some distance from water. I presume they are travelling from one swamp to another. The last brood of young ones evidently remain with their parents during the autumn. A pair in the school swamp still (April) have their chicks following them, and warn them should danger threaten. I stood on a log the other evening and was immediately challenged by the male bird; below me in the rushes the hen answered, then the little ones replied, and as I listened I heard the faint splash of water, the rustlings of a few reeds, and the family disappeared.

Stray Feathers.

Great Flight of Swifts.—In February, 1906, when I was at Port Keats, Northern Territory, I observed an enormous number of Spine-tailed Swifts (*Chætura caudacula*) migrating. They came from the south-east and were heading north-west. The flock appeared to be about 200 yards in width, and maintained an almost continuous column for about six hours. I had never seen these birds there previously, nor did there seem to be any stragglers, as none was to be seen next day. Inquiry from the aborigines elicited the information that these flights had often been seen before, but they could not tell which way the birds returned.—F. L. GODFREY. Darwin.

* * *

Do Variations in Seasons Affect the Size of Eggs?—Although my collection of eggs contains many thousand specimens, all of which have been carefully measured, I have only lately noticed a case of variation in size occasioned, I presume, by a change in season. I refer to eggs of *Chlamydera maculata*. In 1911, a season of drought, I secured with difficulty a few sets from a certain locality, my collector's observations, however, pointing to the fact that at times the birds bred very freely there. In 1912, a season of plenty, I obtained a large number of clutches from the same locality, some of them apparently laid by the same birds that were robbed during 1911. All the eggs collected in 1912 show a marked increase in size compared with those of 1911, the averages in inches being 1.45 x 1.03 for 1911 and 1.55 x 1.05 for 1912. It is well known that in favourable seasons many birds lay more eggs to the clutch than they do in bad seasons, but the question as to whether the size of the egg also varies has, I believe, not been previously raised. As an illustration of the effects of a good season upon the number of eggs to the clutch, I note the following:—Up to 1912 I considered three or four eggs a full clutch for *Gymnorhina dorsalis*, of south-western Australia; in the remarkably favourable spring of 1912 I received particulars of no less than six clutches of five eggs each. While on the subject of the eggs of *G. dorsalis*, my observation of a very large number of eggs goes to prove the correctness of Mr. A. J. Campbell's statement ("Nests and Eggs," page 296) that they vary less than others of the family. Can it be that the Western bird is the older and purer species, and therefore produces eggs more true to type?—H. L. WHITE. Bell-trees, N.S.W., 1/6/13.

* * *

Descriptions of New Eggs.—*Mirafr rufescens*, Ingram.—Clutch, four eggs: surface of shell smooth and glossy, minutely pitted all over; roundish or swollen oval in shape. Ground colour dull greyish or creamy white, well marked all over with minute splashes of pale brown and lilac, those of the latter being somewhat indistinct, and appearing as if beneath the surface of the shell.

Out of nine clutches the set described appears to be the most typical, both as regards colour and shape. The eggs of the series vary in shape and ground colour, as well as the general disposition of the markings. Some are pointed ovals, with a pale bluish-white ground; others are very heavily blotched with umber and pale lilac. The type clutch measures:—(a) 0.75×0.61 , (b) 0.75×0.61 , (c) 0.73×0.61 , (d) 0.73×0.61 . They were collected by Mr. H. G. Barnard, at Brunette Downs, Northern Territory, 3rd April, 1913.

Ptilotis forresti (Ingram).—Clutch, two eggs; surface of shell fine and slightly glossy; oval in shape. Ground colour pale pinkish-buff, becoming very much darker on the apex, where a cap is formed, and here are scattered a few indistinct markings of very pale brown and lilac, the latter appearing as if beneath the shell. The eggs closely resemble those of *Ptilotis sonora*, except that they are smaller. They measure in inches:—(a) 0.78×0.57 ; (b) 0.80×0.58 ; against an average of nine eggs of *P. sonora*— 0.89×0.66 . The eggs belong to a Cuckoo combination clutch, having been found with one egg of *Cuculus pallidus*, and were collected by Mr. H. G. Barnard, at Brunette Downs, Northern Territory, 5th March, 1913.

Myzantha melanocephala crassirostris (North Queensland Miner).—For years past collectors in North Queensland informed me of a Miner which differed from our southern species, but they were unable to obtain specimens. The eggs described were obtained in 1909, but were placed aside pending identification of the bird. Mr. G. M. Mathews has since named the sub-species as above. Clutch, three eggs; oval in shape; surface of shell smooth and slightly glossy; texture fine. Ground colour very pale salmon, marked with small spots and specks, particularly at the larger end, of reddish-chestnut and purplish-grey, the markings forming a cap at the larger end. The clutch measures in inches:—(a) 1.12×0.77 , (b) 1.12×0.76 , (c) 1.15×0.77 . Collected by Mr. Geo. Sharp, on the Herberton Range, North Queensland, 23rd November, 1909. Two other clutches from the same locality measure:—(1) (a) 0.98×0.69 , (b) 0.93×0.72 ; (2) (a) 0.97×0.73 , (b) 0.93×0.71 .—H. L. WHITE. Belltrees, N.S.W., 1/6/13.

* * *

Springfield (Tasmania) Notes.—Gang-Gang Cockatoo (*Callocephalon galeatum*).—A flock of these birds visited this district several times this year. They appear to have their home in mountain ranges to the south-east. One bird was either attacked by some bird or shot at, as some of its feathers were lying on the road. They were soft, downy, red feathers, blood-stained at the base.

Scrub-Tit (*Acanthornis magna*).—Last season I discovered that this bird is an inhabitant of the dense scrubs on our mountain slopes. Three nests were given to me. One had been blown down in a gale. The second was found when the bird was sitting on three eggs. When I asked for these the nest had been robbed. The bird rebuilt, but the two eggs laid were poorly coloured.

Emu-Wren (*Stipiturus malachurus*).—The Emu-Wrens mentioned in my article, page 169, vol. xii., of *The Emu*, safely reared their young. As soon as the little ones were able to take care of themselves the parents, or rather female bird, built another nest, and was sitting by 27th November on three eggs. The nest was not far from the former one. This seems to show that these birds rear more than one brood in the year. It puzzles me where the young ones afterwards go. They appear to stay with their parents until March and then to be driven off. I also noticed that the Emu-Wren sometimes lays two eggs only, having on 30th November and 3rd December respectively found a bird sitting on that number. On latter date three young were found as well. They were about five days old, and had little room in their tiny home. I tried an experiment to see if the Emu-Wrens would rear Tits (*Acanthiza*), and on 17th December took the eggs from the former and placed a clutch of the latter in their place. The Wren continued sitting until the 19th, when the eggs disappeared. At the beginning of February last the same pair was seen with fledgelings following them, so, late as the season was, they must have rebuilt.

Long-tailed Wren (*Malurus gouldi*).—In this district Wrens moult very early, commencing in January, the earliest I have noted so far for any district. This has occurred for three years in succession, so must be a general rule. By May the birds are nearly fully feathered, and a few examples are quite so, and are very merry.

Fan-tailed Cuckoo (*Cacomantis flabelliformis*), Pallid Cuckoo (*Cuculus pallidus*).—Several of these birds are still with us (10th May), in spite of the last fortnight being a succession of heavy frosts in the morning. Last winter a few remained right through the cold season. The want of knowledge among country folk is astonishing. In March a parcel was sent to me by a local resident with a message to the effect that the bird inside was a very rare Hawk, one seldom seen. It was shot because it had been trying to get the pet canaries. The parcel contained a young Pallid Cuckoo in its whitish stage of feathering. No wonder the Hawk was rarely seen! Last week I saw a Ground-Lark (*Anthus*), and heard a Graucalus. They, too, have lingered late, and are generally gone by May.

Wattle-Birds (*Anthochaera inauris*).—A flock of 30 Wattle-Birds came up from the banksian coastal district, and spent a month here, when the blackberries and apples were ripe. They have apparently now returned to the warmer coastal district.

The Hill Bell-Magpie (*Strepera arguta*) likewise descended on the orchards, destroying many apples. The birds suffered severely from the guns of the orchard-owners.

Brown Quail (*Synoisicus diemenensis*).—Early in March a farmer found eight young Brown Quail weak from starvation. They were in the grain paddock, but had evidently lost their parents. He took them home and tried to feed them, but they died that evening. A pair of Quail nested in the school swamp, and have

reared nine young. The whole family come into the school garden, and the other morning were round the house door-step feeding in the grass and amongst the young cabbages.—(Miss) J. A. FLETCHER. Springfield, Tasmania, 10/5/13.

From Magazines, &c.

Early History of the Australian Cassowary.—*Records of the Australian Museum*, vol. x., No. 4, 19th April, 1913, consists of Notes on the Early History of the Australian Cassowary (*Casuarus australis*), by Alfred J. North, C.M.Z.S., C.M.B.O.U., ornithologist. He states that the existence of a Cassowary inhabiting Australia was first made known in 1849 by the late Mr. Wm. Carron, botanist to the Kennedy Expedition from Rockingham Bay to Cape York. Carron, in his "Narrative," 4th November, 1848, writes:—"This morning Jackey went to examine a scrub through which we wanted to pass, and while out shot a fine Cassowary; it was very dark and heavy, not so long in the leg as the common Emu, and had a larger body, shorter neck, with a large, red, stiff, horny comb on its head. Mr. Wall skinned it; but, from the many difficulties with which he had to contend, the skin was spoiled before it could be properly preserved." The subsequent history of knowledge of the species is dealt with in an interesting manner.

* * *

The Passenger Pigeon.—*Bird-Lore* for March-April, 1913, contains several interesting articles dealing with the Passenger Pigeon of North America, and a series of unique photographic illustrations showing the adult birds, young, and so forth. The photographs were obtained by Mr. J. G. Hubbard at Woods Hall, Massachusetts, in the summer of 1898, and represent birds in the aviary of Dr. C. O. Whitman. The Passenger Pigeon is doomed to extinction, as only one living specimen, in the Cincinnati Zoological Gardens, is known to exist. The Passenger Pigeon is a lengthened and elegant species, about 15 or 16 inches in total length. The general colour of the upper surface is greyish-blue, the region of the hind neck being iridescent with gold, emerald-green, and crimson. Throat, breast, and sides are light brown, the rest of the under parts being pure white. Eyes bright red, bill black, and feet pinkish-purple complete an exquisite figure.

Under the caption, "A Vanished Race," Mr. Moritz Fischer gives an account of the Passenger Pigeon. Writing of what has long passed away, he says:—"About 1840, professional catchers began to operate on the flocks. By degrees they bettered the older methods of luring and taking. The chief contrivance universally employed consisted of a capacious net, which could be quickly dropped over a bed baited with salt, mud, or grain, and

to which the Pigeons were attracted by imitation of their call or by the voices of captive mates serving as decoys. By 1870 the netters had much increased in numbers. The register book of Pigeoners in Wisconsin lists some five hundred names of persons engaged in this unholy traffic at about this time. The business of locating, killing, and marketing the birds was now thoroughly systematized, and assumed ominous proportions. Invading the winter home of the flocks, which so far had escaped their marauding expeditions, the Pigeoners raided through the cold seasons. Tracking the birds to the breeding range, they continued their nefarious operations in the great nestings, sparing neither the brooding mates nor their young. The unfortunately merely reminiscent accounts of some of the active participants in the forays of those days were brought together by Mershon in his valuable book on the Passenger Pigeon. . . . The netters describe the remunerative business they followed, and frequently give estimates of the seasonal yield. Averaging these fairly reliable data, we find that the catch for the decade 1866-1876 amounted to more than 10,000,000 Pigeons per year. This number represents shipments only. The birds used in the camps, those taken by farmers and Indians, and the vast numbers killed accidentally in the overcrowded rookeries, probably exceeded 2,000,000 more. Excepting a negligible quantity of squabs, these 12,000,000 were brooding birds, and their death involved that of the nestlings. This annual and terrific loss suffered by the race, made irreparable by the break in the sequence of generations due to the fiendish destruction of the young, swiftly led to the inevitable end. . . .

"A small number of birds outlived the dissolution of the last flocks. Dispersed in couples, in bands of five or more, or as solitary individuals, these were sighted at rare intervals throughout the former breeding range during the nineties. A dozen or so bred near the head-waters of the Au Sable River in 1896. It is the last known nesting. With the beginning of the new century trustworthy records cease, and there is but little doubt that its first years witnessed the passing away of the hapless descendants of a favoured race."

Albert Hazen Wright contributes to *Bird-Lore* some historical records of the Passenger Pigeon, indicating the almost incredible size of the flocks in the days when the birds were but little persecuted. The early colonists of America speak of the Pigeons on migration as having darkened the sky like locusts; there were "millions and millions of birds." In the Pigeon-roosts the sight was wonderful. The boughs of the trees were often broken down by the weight of the nests built upon them. Two hundred birds were taken from a single tree. E. H. Forbush writes of the last Passenger Pigeon—a female. Stories, the author states, have been published to the effect that the Pigeons migrated to South America or Australia. The absurdity of the assertion as regards Australia, at least, is sufficiently apparent. The story of the

Passenger Pigeon should act as a warning to us in Australasia; many of our birds are threatened with a similar fate, notably the fine New Zealand Pigeon and the Nutmeg Pigeon of Queensland.

Astonishing accounts of the multitudes (beyond computation) of these wild Pigeons, and of scenes in bygone days, from the original writings of Peter Kahn (1759) and John James Audubon (1831) are reprinted in "The Smithsonian Report for 1911," pp. 407-424, which may be found in the chief public libraries of the metropoli of the Commonwealth, as well as in the library of the R.A.O.U.

* * *

"Austral Avian Record."—This little publication (a 24-page journal, demy 8vo) has reached issue "No. 8," which completes volume i.

The journal is "devoted primarily to the study of Australian avifauna," and Mr. Gregory M. Mathews, F.R.S. (Edin.), &c., is the editor and chief contributor. Such a journal should interest Australian students much. In looking through its pages one finds chiefly "Notes, Additions, and Corrections" by the author for reference, anticipating his greater work on "The Birds of Australia." However, Nos. 6 and 7 (combined issue) are of great historic interest to Australians on account of an article by Mr. Gregory M. Mathews and Dr. Witmer Stone, of America, as collaborators, entitled "A List of the Species of Australian Birds described by John Gould, with the Location of the Type-Specimens."

The writers state that details of the sale of Gould's collection of Australian birds to Dr. Wilson, of Philadelphia, are mentioned in the late Dr. Bowdler Sharpe's "Analytical Index to the Works of John Gould," Dr. Wilson being at the time president of the Academy of Natural Sciences of Philadelphia, and his entire ornithological collection, consisting of many thousands of specimens, was presented to that institution.

Negotiations for the purchase of the Gouldian collection was entrusted to one of Dr. Wilson's brothers, then resident in England, and were completed in 1847. The skins were sent to Verreaux Brothers, Paris, to be mounted, and reached America in 1849. There were in all 1,858 specimens. Verreaux prepared a manuscript catalogue of the collection, based on an original catalogue of Gould's, which apparently was never sent to America. The information contained in this catalogue is transcribed on the bottoms of the stands, and consists of number, name, sex, and locality of each specimen, with the addition: "Type, Gould, 'Birds of Australia'"—every bird being so marked whether it was the type of the species or not.

When Dr. Stone took charge of the ornithological collections in the Academy, about 25 years ago, one of his first acts was to have the type specimens unmounted, and placed in metal cabinets,

while the stands containing the Verreaux labels have been marked to correspond with the specimens.

In the case of each species, one specimen has been selected as the type and so marked. Usually this selection was easily made, because the bird described by Gould was readily identified by locality, sex, measurements, &c. In instances where no individual bird was mentioned in the original description, the selection has necessarily been arbitrary, but it sounds somewhat pedantic to state "*and is final.*" Although most of Gould's Australian types are in the Philadelphia Academy, it should be recollected that some species were described from material never in his possession. A few other types were never sent over, better specimens having seemingly been substituted. Again, types of species described after the date of the Wilson purchase are mostly to be found in the British Museum, which secured Gould's later Australian material.

It would appear that Gould has introduced 427 names into Australian ornithological literature, of which number it is stated 85 are synonyms, leaving a balance of 342 species and sub-species for which the great author is responsible.

Review.

["Nests and Eggs of Birds Found Breeding in Australia and Tasmania." By Alfred J. North, C.M.Z.S., &c., Ornithologist to the Australian Museum.]

IN continuation of the publication of this work, parts i. and ii. of vol. iv. have been issued.

Part i. contains the Families *Ibididæ* and *Plataleidæ* of the Order *Plataleæ*; the Families *Ardeidæ* and *Ciconiidæ*, belonging to the Order *Herodiones*; and the Sub-Families *Cygninæ*, *Anseranatinæ*, *Plectropterinæ*, *Cereopsinæ*, *Chenonettinæ*, *Anatinæ*, *Fuligulinæ*, and *Erismaturinæ* of the Family *Anatidæ*, which comprise the representatives of the Order *Chenomorphæ* in Australia.

Part ii. contains the Australian representatives of the Orders *Columbæ*, *Gallinæ*, *Hemipodii*, and the Sub-order *Pedionomi*. As in the previous parts, the illustrations of birds are reproduced from drawings made by the late Mr. Neville Cayley. The figures of eggs, which are of the natural size, were reproduced by the heliotype process, at the Government Printing Office, from photographs of the specimens taken under the direction of the Government Printer and the supervision of Mr. A. Dyer, Miss A. E. Potter being responsible for hand-colouring the plate of eggs in the coloured copies.

These parts uphold the general excellence of the preceding issues of the work, especially the illustrations from line and half-tone blocks, while an amount of valuable and original information is found in the letter-press.

Correspondence.

IS THE AUSTRALIAN MAGPIE A SONGSTER?

To the Editors of "The Emu."

SIRS,—It would be interesting to learn whether many members of the Ornithologists' Union agree with certain statements that have been made in that excellent little work, "An Australian Bird Book," by J. A. Leach. Too much could hardly be said in praise of the book, but it is a pity it is marred by a few mistakes.

On pages 2 and 3 of the introduction we are told that our Magpie (*Gymnorhina tibicen*) is one of the great song-birds of the world, and again, on page 150, "That glorious songster, the Australian Magpie." The Magpie is not a song-bird at all; it utters naturally a harsh guttural sound; yet in confinement, curiously, it can be taught to whistle a few bars of certain tunes. The Magpie lives in association with the Butcher-Bird (*Cracticus destructor*), which latter is, without a doubt, the finest songster of Australia. The mistake is continually being made, the Magpie being credited with the song of the Butcher-Bird.

Mr. Frank Tate, in the introduction to Leach's "Bird Book," page 4, remarks:—"Australian nature-poetry will be handicapped until our children give names like 'Bobolink' and 'Chickadee' and 'Whip-poor-will' and 'Jacky Winter' to our birds." Well, we have so named a large number, but the Royal Australasian Ornithologists' Union ignores the names and suggests others. We are told to call the Blood-Bird (*Myzomela sanguinolenta*) by the name "Sanguineous Honey-eater"; the Crack-a-barney or Twelve Apostles (*Pomatorhinus frivolus*) by the name "Grey-crowned Babbler"; the Willie Wagtail (*Rhipidura motacilloides*) by the name "Black-and-White Fantail"; the More Pork (*Podargus strigoides*) the "Tawny Frogmouth"; and so on. Could anything be more absurd? It is sincerely hoped that the new names will not "catch on." On page 104 the following occurs:—"The Tawny Frogmouth is one of the most peculiar, and is the ugliest of birds. On account of its wide mouth, it is called the Frogmouth, and on account of the confusion connecting it with the Boobook Owl, which calls 'Mopoke,' this bird is also called the Mopoke." Page 85—"The Boobook Owl, though not often seen, calls 'Mopoke,' which sounded like Boobook to the aboriginal ear, but became Cuckoo to the first white residents. . . . Confusion was caused, for when daylight came, and the Frogmouth was seen sitting in the tree, the Frogmouth was supposed to be responsible for the frequent calls of the previous night. However, some reliable observers, notably Mr. C. H. M'Lennan ('Mallee-Bird') and Mr. T. H. Tregellas, claim that the Frogmouth does call 'Mopoke' occasionally, but the Boobook Owl is the bird that is responsible for the frequent 'Mopoke' on calm evenings." In "The Birds of Australia," by Lucas and Le Souëf, page 189, the Boobook Owl is also credited with pro-

ducing the cry "More Pork." Now, the Owl's cry sounds like "Who" repeated rapidly about eight times. The *Podargus strigoides* is the bird which calls "Cuckoo," and which the early settlers thought sounded like the words "More Pork"; it should be so written, not "Mopoke," which is meaningless.—I am, &c.,
Eidsvold, Queensland, March, 1913. THOS. L. BANCROFT.

[Regarding Australian Magpies, ornithologically they have been placed in the Sub-Order *Acromyodi*, or "Singing Birds." Ornithologists from other lands, who have travelled, state that the Magpie is one of the finest feathered songsters of the world. The other points raised by Dr. Bancroft are published for whom they may concern. No sound field observer admits that the call of the small brown Owl is produced by the Frogmouth (*Podargus*), whether the sound be "Buck-buck," "Boo-book," "Who-who," "Mo-poke," or even "Cuc-koo." The sound varies according to distance. Ask such an observer as Mr. E. M. Cornwall, Mackay, Queensland, who, by cleverly mimicking the calls, in many districts, has invariably brought the Boobook Owl, and not a *Podargus*, into the tree overhead.—EDS.]

THE R.A.O.U. "CHECK-LIST."

To the Editors of "The Emu."

DEAR SIRs, — After carefully going through the R.A.O.U. "Check-list," I agree that it involved much time and forethought on the part of the compilers. I do not consider that the "Check-list" was adopted by the ornithologists of Australia, because the members who attended the Tasmanian session did not fairly represent Australian ornithologists. After the list was accepted I spoke to several of the members, and they told me they did not know what they were voting for; and others said—"We are tired of being chopped about from one list to another; anything will do as long as it is a fair list." I cannot see for a moment how the list can stand when it is built up on such an unsafe basis as John Gould's nomenclature. Another thing, what right has anyone to draw a line at Gould and say, "That is the limit," especially when we consider that Australian ornithology is but in its infancy, and the best of Australian ornithologists know little more than the A B C of it? How can a list stand when it contains so many very shaky sub-species which are called species? Take, for instance, two at random, like *Zosterops halmaturina* and *Petroica campbelli*. It is a pity all this time and energy should be wasted, for wasted it is, when the R.A.O.U. "Check-list," in its conservative way, has tabooed trinomials in the face of the ornithological world having accepted them.

There are many other weak points in the list which could be remedied, but the foundations will not warrant the repair.—I am, &c.,

S. A. WHITE.

Wetunga (S.A.), 9/6/13.

[The above letter has been referred to me by the editors for

perusal and comment. Before dealing with Captain White's trenchant criticisms upon the "Check-list" and report, and (by inclusion) upon the scientific attainments of the members of the "Check-list" Committee, I wish to make it absolutely clear that (a) I do not herein necessarily express the views of the committee named, but simply my own as a member of such, and (b) I do not admit the right of a member of the R.A.O.U. (who attended that session) to make publicly post-sessional attacks upon the "Check-list" and report. Obviously the sessional meeting at which the report was presented was the proper place for discussion and criticism. However, as Captain White is the accredited champion, in Australia, of trinomialism, constitutional strictness may, in such special circumstances, be relaxed without perhaps creating a precedent for further transgressions.

Dealing firstly with the most important of Captain White's criticisms—namely, his interrogative fulmen, "How can a list ('Check-list') stand when it contains so many very shaky sub-species which are called species?" and his citation in support of two instances, *Zosterops halmaturina* and *Petroica campbelli*—I answer simply that neither of such is called a *species* in the "Check-list," but that each is called a *sub-species* in it. As to the alleged instability of the species, let me emphasize the facts that the former sub-species was named by Mr. A. G. Campbell, and the latter by the late Dr. Bowdler Sharpe, and that both sub-species have been confirmed as such by Mr. Gregory Mathews, and also by the collective and final "judgment" of the "Check-list" Committee.

The second most important of Captain White's criticisms is contained in his statement that he did not consider that the "Check-list" was adopted by the ornithologists of Australia, because the members who attended the Tasmanian session *did not fairly represent Australian ornithologists*. In reply, the critic is reminded that, in the first place, the "Check-list" was signed by six ornithologists who, when elected, were considered as fairly representing Australian ornithology, and that, in the second place, a printed circular was posted to every member of the Union, in ample time, notifying the date and place of the session, and also notifying the special day set apart during the session to receive the report of the "Check-list" Committee. I learn from trustworthy sources that the session was in point of attendance the most successful one of the Union ever held, and that, as regards the adoption of the "Check-list," there was only one real dissident.

The third most important of Captain White's criticisms is his challenge—"What right has anyone to draw a line at Gould and say 'That is the limit?'" Presuming that Captain White means "starting point" when he says "limit," I point out that no one person has so drawn such a line, but the Royal Ornithologists' Union, acting within its own territory, has done so. Why not? Captain White may as well ask what right has anyone, or any body, association, or congress, to draw a line at the date of the "10th

edition " of Linnæus, or the " 12th edition " of Linnæus, or at any point of time other than the actual beginning, and say " That is the starting point."

Regarding Captain White's tilt that he " cannot see for a moment how the list can stand when it is built up on such an unsafe basis as John Gould's nomenclature," it is difficult to understand the intended application of his remarks—whether in respect to the law of priority, or to the binomial phase. I think that it does not signify much which of the two is intended. John Gould's nomenclature has, except as to a few emendations, stood solidly for 50 years and upwards, and the basis is still so safe as to bear, if required, the superadded weight of trinomialism.

In respect to Captain White's personal remarks on the elementary knowledge of Australian ornithologists, I have only to say that, whilst freely admitting the force of such remarks as applied to myself, I at the same time strongly resent them so far as they affect the standing of such ornithologists as Colonel Legge and Messrs. A. J. Campbell, Robert Hall, Basset Hull, and John W. Mellor. The published works of the three first-named gentlemen are well known throughout the scientific world, and the specializations in ornithology of the last-named two are widely known and appreciated. Verily, a prophet hath no honour in his own country.

Captain White's concluding remarks, reading " There are many other weak points in the list which could be *remedied*, but the *foundations* will not warrant the *repair*," are too indefinite and obscure for reply.—ALEX. WM. MILLIGAN.]

THE ACANTHIZA OF FLINDERS ISLAND.

To the Editors of "The Emu."

DEAR SIRs,—I wish to state, *re* contribution from Mr. F. M. Littler under "Stray Feathers" in the last issue of *The Emu* (vol. xii., p. 278), that I am pleased to see his remarks about the Acanthizas. He is right. I saw the mistake myself, but too late to withdraw the note before publication. My explanation of the matter is this: I labelled my skins *A. diemenensis*, and wrote notes roughly for that bird. Later, I listened to other opinions (I am sorry to say), and changed the name to *A. ewingi*. I afterwards found my first judgment to be correct. The difference between the two birds is very slight, but an ornithologist like Mr. Littler, who is so conversant with the birds of his island home, would detect them immediately. I am alone responsible for this error.—I am, &c.,

S. A. WHITE.

Wetunga (S.A.), 9/6/13.

IS THERE A SCARLET-BREADED KINGFISHER?

To the Editors of "The Emu."

SIRS,—In none of my bird books can I find any description of, or even reference to, the scarlet-breasted Kingfisher. In Hall's "Key" I think twelve different species are described, but I can find nothing in the list that would serve to establish the identity of this beautiful bird. In the "Check-list" recently issued by authority of the R.A.O.U. fifteen Kingfishers are mentioned, but, so far as I can make out, the scarlet-breast is not included. That there is such a bird I know, as I have seen it at very close quarters in the remote southern border districts of New South Wales. It is one of the most charming bird-forms the writer has ever seen. The back and wings are metallic green and royal blue, the throat whitish, and the breast just as vivid a scarlet—so far as one may judge without handling the bird—as the Scarlet-breasted Robin. I would be glad if you could enlighten me on this point.—I am, &c.,

Wagga, N.S.W., April, 1913.

W. M. SHERRIE.

[There is no scarlet-breasted Kingfisher indigenous to Australia. The nearest colour is "ferruginous orange," which describes the breast of the familiar river Kingfisher (*Alcyon*).—Eds.]

Obituary Notice.

MELLOR.—On the 4th May, 1913, at Holmfirth, Fulham, S.A., in his 69th year, after a long and painful illness, John Fox, youngest son of the late Joseph Mellor, of Adelaide, and dearly beloved husband of Eliza Mellor.

THE late Mr. J. F. Mellor, although not an active member of the R.A.O.U., always took a deep interest in its affairs since its inception. He accompanied Mrs. Mellor and their son, Mr. J. W. Mellor, to all the annual sessions, except to the last (Launceston) meeting, when he was incapacitated on account of the dire illness to which he ultimately succumbed.

Members who were fortunate enough to know the late Mr. Mellor will ever remember his genial disposition and cheerfulness, especially at the camp-outs, at which, moreover, being of a mechanical turn of mind, he was an indispensable hand. In numerous ways, private and public, his place will not be easily filled, and members will condole with his family and friends at their loss.

The late Mr. Mellor married a daughter of the late Mr. John White, of Reedbeds (near Adelaide), therefore was brother-in-law to the late Mr. Samuel White, frequently mentioned in Gould's great work, "The Birds of Australia."

Bird Observers' Club.

THE first meeting of the Bird Observers' Club for 1913 was held at the Thistle Tea-rooms, Elizabeth-street, on Wednesday evening, 15th January. Mr. C. F. Cole was the host. There was a good attendance of members. The chair was occupied by Dr. H. W. Bryant, president. Mr. Slaney was

elected a member of the Club. Mr. L. G. Chandler, the hon. secretary, reported that a party of Club members had spent an instructive week-end on Mud Island, Port Phillip Bay. Thirty-seven specimens of the White-faced Storm-Petrel (*Pelagodroma marina*) had been ringed, in connection with the study of migration. The Mutton-Bird rookeries at Phillip Island formed the subject for the evening, and Mr. Cole thought it was time that the Club arrived at some finality in regard to the preservation of these interesting rookeries. Mr. A. J. Campbell said that little was known regarding the life-history of the Mutton-Bird, and the B.O.C. should make systematic studies. Mr. Campbell made suggestions concerning the protection of the birds. Mr. A. H. E. Mattingley considered that only wire crooks should be used in extracting eggs from the burrows. When crooks with wooden handles were used the mouths of the burrows were enlarged, and finally the tunnels collapsed. Mr. G. A. Dyer stated that last year, on Phillip Island, he met a man who had in his possession four 40-gallon casks of bird oil. At a rough estimate, over 3,000 birds had been killed to obtain this oil. The chairman described a visit which he had recently made to Cape Woolamai, in company with Messrs. A. J. and A. G. Campbell. He considered that the Club should study the Mutton-Birds scientifically. He outlined several plans whereby the many problems in the life-history of the Petrels could be elucidated. Messrs. O. W. Rosenhain, F. E. Wilson, and A. C. Stone also spoke on the subject. Major J. M. Semmens, Chief Inspector of Fisheries and Game, who was present by invitation, said that it might be better to go on with protection without waiting for the scientific points to be cleared up. He detailed a series of recommendations, which, he said, he intended to place before the Minister for Agriculture at an early date. It was agreed that members of the Club visit Cape Woolamai before the old birds had left the rookeries for the season. Mr. F. E. Howe exhibited an unusual nest of the White-shafted Fantail (*Rhipidura albiscapa*), the specimen being devoid of the "tail." Mr. C. Barrett exhibited photographs of the nests of typical birds of the Lake Boga district, and Mr. Chandler photographs taken during the recent Club outing at Mud Island.

The monthly meeting of the Club was held on Wednesday evening, 19th February, at the residence of Mr. Dudley Le Souëf, C.M.Z.S., Zoological Gardens, Parkville. Before dinner, members inspected the gardens, under the guidance of Mr. Le Souëf. The large mounds of the Brush-Turkey created considerable attention. The host stated that the male bird alone constructed the mound, the earth and *débris* being scratched up by the bird's feet, with a backward motion. A pair of White-quilled Rock-Pigeons (*Petrophassa albipennis*) was also closely examined. Mr. Le Souëf had recently brought these birds from the Northern Territory. At the business meeting Mr. Le Souëf occupied the chair. Mr. L. G. Chandler, hon. secretary, read the report of the Mud Island camp-out, and a brief paper by Mr. A. H. Chisholm, of Maryborough, on the nesting habits of Thrushes. Mr. J. A. Ross then read an interesting paper on Cuckoos. Mr. Le Souëf gave a lecture on his recent trip to the Northern Territory. A series of lantern slides was shown. Mr. D. Le Souëf exhibited an adult specimen of the White-faced Storm-Petrel (*Pelagodroma marina*), and two young in the down. Mr. F. E. Wilson showed a set of eggs of the Yellow Robin (*Eopsaltria australis*), with an egg of the Bronze-Cuckoo (*Chalcococcyx plagiatus*). This was a new record. On behalf of Mr. H. L. White, of New South Wales, Mr. A. J. Campbell exhibited a magnificent series of eggs of the Spotted Bower-Bird (*Chlamydera maculata*), and also a set of eggs of the rare Yellow-spotted Bower-Bird (*C. guttata*). For further note on this exhibit see *Emu*, vol. xii., p. 286.

The monthly meeting of the Club was held on Wednesday evening, 19th March, at the residence of Dr. H. W. Bryant, Toorak. The host occupied the chair. Mr. C. F. Cole read an interesting paper on the Mutton-Bird. The paper contained many valuable notes on the habits of the birds, and

Mr. Cole was congratulated on his good field-work. Mr. T. H. Tregellas followed with a paper entitled "Birds of Passage." He dealt with many migratory and partially migratory birds. Mr. P. R. H. St. John was unanimously elected a member of the Club. Mr. A. C. Stone exhibited a set of four eggs of the Plain-Wanderer. Dr. Bryant exhibited a skin of the Terek Sandpiper (*Terekia cinerea*), from the Snowy River, Victoria, and skins of the Grey-rumped Sandpiper (*Totanus brevipes*) from Victoria and another wader from Samoa. Several members contributed nature notes.

South Australian Ornithological Association.

THE annual meeting of the Association was held in the Adelaide Institute on 28th March, Mr. E. Ashby presiding. There was a good attendance. The honorary secretary, Mr. J. W. Mellor, read the thirteenth annual report, which showed that good progress had been made, a number of new members having joined, and much more interest was now being taken in the study and welfare of our native birds. The police were taking an active part in watching for offenders against the *Birds Protection Act*, and prosecuting those found breaking the law, while numerous inquiries were being made by people relative to the usefulness or otherwise of our native birds. Two members of the Association, Mr. J. W. Mellor and Captain S. A. White, had attended the congress of the Royal Australasian Ornithologists' Union recently held in Tasmania, and officially taken charge of the ornithological investigations made in connection with the scientific expedition to Flinders Island, in Bass Strait, after the congress session. The silver cup presented by the Association to be competed for annually by the school children of South Australia had this year been won by the Wilkawatt public school. It was found that this cup was stirring up enthusiasm amongst the children, and they were making keen observations relative to the habits of the birds to enable them to write the essays accurately. The financial statement showed a substantial credit balance. The report and balance-sheet were adopted. The honorary secretary reported having recently gone to Port Adelaide, at the request of the Police Department, to investigate a case in which native birds were being exported by a bird-dealer, and these had been detained by the police until it was ascertained whether any protected birds were amongst the consignment. Mr. Mellor found that the species were not protected, and they were allowed to be forwarded. Captain S. A. White tabled the "Check-list" of the R.A.O.U., and also *The Ibis*. Mr. F. R. Zietz was elected to the position of president for the ensuing year, but it was resolved to adjourn the meeting until next month, and in the interim to call for nominations for the positions of vice-president and honorary secretary and treasurer, and in future years to call for nominations for all officers of the Association, these to be in the hands of the secretary at least ten days prior to the annual meeting. The subject of the evening was the study of the Heron and Bittern families. Specimens were brought by Mr. Ashby and Captain White, and it was decided to continue the subject at the next meeting.

The adjourned annual meeting of the Society was held in the Royal Society's rooms, North-terrace, on the evening of 25th April. Mr. Robert Zietz (president) occupied the chair. Other officers elected:—Vice-president, Mr. J. W. Mellor; secretary, Mr. R. Crompton. Dr. A. M. Morgan reported the appearance of the Spiny-cheeked Honey-eater (*Acanthogenys rufogularis*) on the plains. Mr. Zietz said he had seen the first Flame-breasted Robin (*Petroica phanicea*) for the season. Capt. White said he had observed numbers of these beautiful birds on the salt-flats near St. Kilda during the week, and that these birds leave the ranges at this time of the year and disperse over the low country. The subjects for the evening were Cranes, Herons, Egrets, and Bitterns. A fine collection of these birds

was tabled by Mr. Zietz, from the Adelaide Museum. Capt. S. A. White showed quite a number for comparison, among them the Grey Heron (*Ardea cinerea*) procured in South Africa. This bird is found throughout the world. Specimens from the Museum are from India. Other specimens were Reef-Herons, Night-Herons, Large-billed Mangrove-Bitterns, some Minute Bitterns from the Island of Zanzibar, and the beautiful White-winged Zambesi Heron. In addition to the birds named, some fine specimens of the Spoonbill were included in the Museum exhibit.

The usual monthly meeting was held on Friday evening, 30th May, in the Royal Society's rooms, North-terrace, Mr. Robert Zietz presiding. Mr. Edquist, Educational Department, thanked members for articles on bird-life for the school paper, some of which were being published. Capt. White moved, and Dr. Morgan seconded, that a journal in connection with the Association should be published quarterly. After much discussion it was resolved that a committee should go more fully into this matter and report at the next meeting. Mr. M. Hawker gave an interesting account of the antics of some Emus on their first sight of a motor-car during a trip that gentleman had lately. The birds under notice for the evening were Swans, Geese, and Ducks. Mr. Robert Zietz showed a fine collection of these birds from the Museum collection. Mr. Ashby sent specimens, the most noticeable being the Pigmy-Goose (*Nettion pulchellus*) and White-quilled Pigmy-Goose (*N. albipennis*). Mr. Laffer, of the Roseworthy College, showed a male Shoveller (*Spatula rhynchotis*) in its breeding plumage, also a pair of Pink-eared Ducks (*Malacorhynchus membranaceus*). Capt. S. A. White exhibited a fine series, including White-headed Shieldrake (*Tadorna rufigerum*), Shieldrake (*Casarca tadornoides*), Blue-billed Duck (*Erismatura australis*), and Pied Goose (*Anseranas semipalmata*). Some interesting notes were read by the hon. secretary from Mr. Fisher, dealing with the birds of Knightsbridge.

The monthly meeting was held in the Institute, Adelaide, on 27th June, Mr. F. R. Zietz presiding. The honorary secretary, Mr. R. Crompton, and Captain White reported upon the investigations made by the publishing committee appointed at the last meeting, relative to printing a journal in connection with the Association, and it was resolved to leave the arrangements with this committee to carry out the work in the best way possible. Mr. E. Ashby tabled a copy of the bill now being prepared for Parliament for establishing the extended reserve on Kangaroo Island; its title is "A Bill for an Act to Establish a Reserve on Kangaroo Island for the Protection, Preservation, and Propagation of Australasian Fauna and Flora, and to provide for the Control of such Reserve, and for other purposes." Mr. Ashby explained that the Royal Society suggested alterations for the smoother working of the bill, which he hoped would become law. Mr. A. G. Edquist reported upon the essays written by the public school children in competing for the silver challenge cup presented by the Association, and tabled some of the best efforts of the children. Some of these essays were exceptionally meritorious, one by a boy specially so, his description of the Black-breasted Plover and its nesting habits being worthy of older field-observers. Professor A. J. Perkins and Mr. W. Weidenbach were elected as members, while the following nominations for membership were made by Dr. A. M. Morgan:—Messrs. C. H. Rischbieth, Harold Fisher, H. H. Dutton, R. M. Hawker, R. T. Melrose, S. S. Ralli, G. J. R. Murray, and H. W. Hughes. The subject of the evening was centred in the Pelican, Gannet, Frigate-Bird, Tropic-Bird, and Cormorant families, and some good specimens were shown by various members, Mr. F. R. Zietz's exhibit being from the national collection at the Museum. Mr. E. Ashby exhibited several rare Parrots recently obtained from a private collection in Queensland, viz.:—The rare Chestnut-shouldered Parrot (*Neophema pulchella*), also the Scarlet-shouldered Parrot (*Psephotus pulcherrimus*), the Crimson-bellied Parrot (*P. hamatorrhous*) and its near ally the Yellow-vented (*P. xanthorrhous*), the Red-rumped

Parrot (*P. hematonotus*), and the Many-coloured Parrot (*P. multicolor*). Mr. J. W. Mellor exhibited a freak of nature—a domestic chicken that had been hatched with four well-developed legs. It was resolved to study a portion of the Hawk family at the next monthly meeting.

Notes and Notices.

Erratum.—Launceston Session, second day (*Emu*, vol. xii., p. 143).—Obviously “17th November” should read “18th November,” the former date being Sunday.

Treasurer's Note.—The hon. treasurer again desires to remind members that subscriptions, being payable in advance, are now due, and he will be glad to receive any for the current year; also payment for the extra part last year (“Check-list,” 2s. 6d.) where still owing.

Honours for Members of the R.A.O.U.—Dr. T. Harvey Johnston, Lecturer in Biology in the University of Brisbane, for his work on the animal parasites of Australia, has been awarded the David Syme Research Prize by the Council of the University of Melbourne. Dr. Johnston has published a number of papers on different parasites, and before his removal to Brisbane last year was on the staff of the New South Wales Bureau of Microbiology. The prize is open, with a few reservations, to Australia, and is for the encouragement of original research.

Mr. C. Fenner, amongst other distinctions, at the University of Melbourne, was awarded the Kernot Research Prize for Geology.

Mr. Brooke Nicholls, the hon. press correspondent of the Union, has passed his examinations for the Doctorate of Dental Science (D.D.Sc.) This is the first occasion this degree has been granted by the University of Melbourne. Dr. Nicholls is congratulated accordingly, and is deserving of every success.

Mock-Latin Names.—The following is taken from *The Yorkshire Weekly Post*, 11/1/13, and, if the word “ornithological” be substituted for “entomological,” the subject may possibly apply, in these latter days, to any enlightened country, save, of course, to the Commonwealth:—

“Mr. H. B. Brown gave a lecture ‘On Entomological Names.’ He characterized his address as ‘a jeremiad’—a tale of lamentation and of woe—concerning the dire confusion and chaos into which men who call themselves Scientists (with a capital S) have brought the study of insect-life by their ill-considered and unrestrained invention of countless mock-Latin names. An obvious disadvantage in the use of vernacular names is their instability. A second and greater disadvantage in the use of all such names is their uselessness in all countries except that which gave them birth. Many, in fact most, of our English popular names are untranslatable. The invention of a convenient method of naming insects constitutes our debt to the great Swedish scientist, Karl Linné. The Linnean system was a binomial system. On many of the absurdities which certain entomologists have introduced the lecturer made a brilliant onslaught, and gave examples of the most extravagant instances. Here, in the industrial north, we have for our keenest field-workers men of the so-called ‘working class,’ men who are splendid observers in the field and keen lovers of nature, but men to

whom the long, meaningless, mock-Latin names that are now hourly invented must be anathema. If in our day the science of entomology can be advanced only by the invention of names for every freak that is found to exist naturally, or that can be manufactured in our breeding-cages, then the simple pleasure that our forefathers derived from its pursuit cannot be ours, and the day will surely come when entomology, as a hobby for the jaded 'men of toil,' will be a thing of the past."

The Wild Life Preservation Society of Australia.—A society formed four years ago, which has done active work since its inception towards securing protection for the native fauna, has recently endeavoured to secure the entire protection of the Black Swans, as has been done in the case of the Brush and Plain Turkeys in New South Wales; but this object has not yet been attained. After repeated representations to the State authorities, the opossum has been entirely protected up to 1924. Notwithstanding such protection, the export of opossum skins still goes on. Representations have therefore been made to the State authorities and to the Minister for Trade and Customs with the object of stopping the exportation of these skins. It is believed were it not for the export trade the destruction of these animals would cease. The Society has reason to believe that its representations in this direction will shortly have a satisfactory result. Already the exportation of Emu skins is prohibited, although the Emu is not, like the opossum, entirely protected. Whether other States will fall into line with New South Wales remains to be seen. In Queensland a very systematic and inhuman slaughter goes on in the interest of the opossum skin trade, the methods of trapping being very barbarous.

The prohibition of the importation of certain plumage appears to be inequitably enforced in the various States, every case of these goods being opened by the New South Wales Customs, whilst there is every indication that in some of the States great laxity in this respect exists. This fact has been brought directly under the notice of the Minister for Trade and Customs, who has been good enough to intimate that inquiries are being made. The question of the close season for Wild Ducks has been raised by a correspondent of the Society, and the desirability of having a different season in the various localities has been (not for the first time) discussed.

In a Consular report received from the late Vice Consul-General in New South Wales for the U.S.A., Mr. Baker, prominence is given to the closing of the market in Australia to imported plumage of certain kinds. Mr. H. D. Baker, who is now Consul for U.S.A. at Nassau, the Bahamas, is a member of the Wild Life Preservation Society of Australia, and an enthusiast on bird protection. The Wild Life Preservation Society of Australia at its last two functions employed cinematograph pictures of a very interesting and instructive character, which have been much appreciated by all present.

The annual subscription of the Society is 5s., and the hon. secretary is Mr. Arthur W. Atkinson, "Whare-Ona," Manly, New South Wales.

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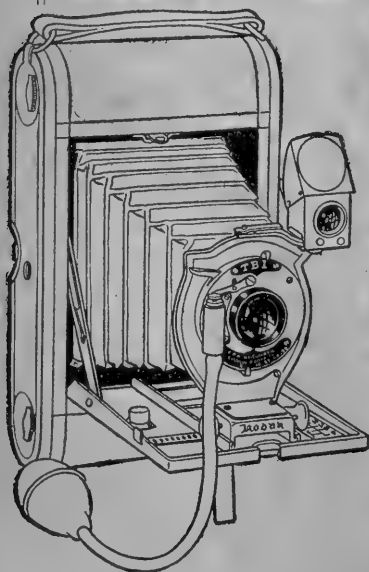
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A Quarterly Magazine to popularize the Study and Protection
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Official Organ of the ROYAL AUSTRALASIAN ORNITHOLOGISTS' UNION



Editors { A. J. CAMPBELL, Col. Mem. B.O.U.
CHARLES BARRETT.

Melbourne:

WALKER, MAY & CO., PRINTERS, 25 MACKILLOP STREET.

EUROPEAN AGENTS:

WITHERBY & CO., 326 HIGH HOLBORN, LONDON.

Published October, 1913.

CONTENTS - OCTOBER, 1913.

(The author of each article is responsible for the facts recorded therein, and any deductions he may draw.)

	PAGE
A COMMONWEALTH COLLECTION. <i>By A. J. Campbell, Col. Mem. B.O.U.</i>	65
DESCRIPTION OF A NEW SERICORNIS. <i>By C. F. Cole, R.A.O.U.</i>	74
BIRDS OF MOORA (W.A.) AND DISTRICT. <i>By C. L. E. Orton and P. T. Sandland, Ms.R.A.O.U.</i>	75
THE BLACK-EARED CUCKOO (<i>Mesocallius palliolatus</i> , Lath.) <i>By P. A. Gilbert and H. Keane, Ms.R.A.O.U.</i>	80
SOME SWAMP BIRDS. <i>By A. C. Stone, R.A.O.U., Melbourne</i>	82
BIRD-LIFE ON WHITE ISLAND (N.Z.) <i>By W. R. B. Oliver, R.A.O.U., Auckland.</i>	86
VISIT TO TORILLA PLAINS. <i>By E. D. Barnard, R.A.O.U., Koonigal (Q.)</i>	90
THE BIRDS OF PEEL ISLAND. <i>By Noel V. I. Agnew, R.A.O.U., Moreton Bay, Queensland</i>	93
AMERICAN VIEW OF THE R.A.O.U. "CHECK-LIST."	97
"THE BIRDS OF AUSTRALIA"	99
STRAY FEATHERS.—Charcoal in Finches' Nests, 100; Regent Bower-Bird (<i>Sericulus chrysocephalus</i>), 101; White Cockatoos, 101; Brush-Turkeys in England, 101.	
FROM MAGAZINES, &C.—Montebello Islands	102
CORRESPONDENCE	102
ABOUT MEMBERS	104
OBITUARY NOTICE	104
DESCRIPTION OF A NEW PARROT. <i>By (Dr.) W. Macgillivray, R.A.O.U., Broken Hill, N.S.W.</i>	105
NEXT ANNUAL SESSION, R.A.O.U.	106

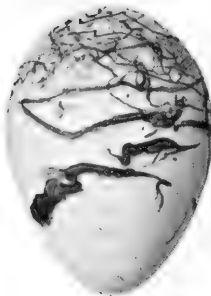
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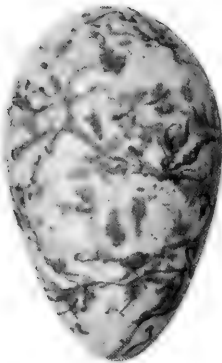
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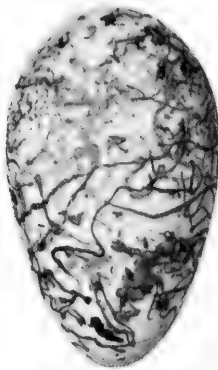
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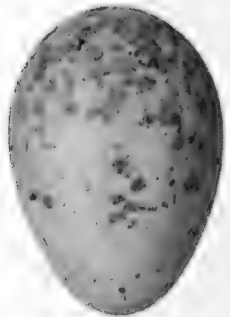
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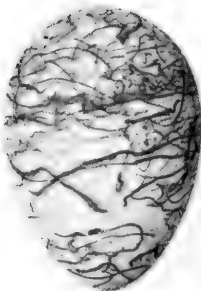
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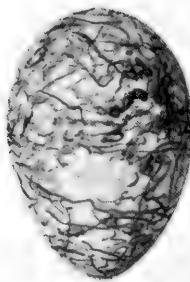
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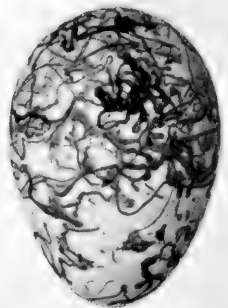
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8



9

1 and 2—*Chlamydera maculata*.
3—*C. cerviniventris*.
4—*Ptilonorhynchus holosericeus*.

5—*C. nuchalis*.
6—*Ptilonorhynchus minor*.
7—*Sericulus chrysocephalus*.

8—*C. guttata*.
9—*C. orientalis*.

The Emu

Official Organ of the Royal Australasian Ornithologists' Union.

"Birds of a feather."

VOL. XIII.]

1ST OCTOBER, 1913.

[PART 2.

A Commonwealth Collection.

BY A. J. CAMPBELL, COL. MEM. B.O.U.

INTRODUCTION.

FOLLOWING on Mr. Milton S. Ray's thoughtful remarks in defence of oology, reprinted in part from *The Condor* (California) in *The Emu*, vol. x., pp. 54-56, and the statement of the late Dr. P. L. Sclater, in an address before the British Ornithologists' Club, that he "rejoiced in the progress of oology" (*vide Emu*, vol. xi., p. 260), I make no apology for giving a description (howbeit only superficial) of the magnificent collection of Australian eggs, the property of Mr. H. L. White, R.A.O.U., Belltrees, New South Wales.

At the close of the Sydney session of the R.A.O.U., October, 1911, by the kind invitation of Mr. White, Mr. D. Le Souëf and myself proceeded to Belltrees and inspected this collection, much to our pleasure and instruction.

Belltrees homestead is about 20 miles from Scone, on the Sydney-Brisbane railway, where we left the line. The up-to-date home is situated near the Upper Hunter River, which courses through fertile flats over a pebbly bottom, between banks fringed with shapely sheoaks (*Casuarina*). Surrounding it is an amphitheatre of hills dominated by the double-headed peak of Woolooma, distant about 6 miles, 5,000 feet above sea-level (see *Emu*, vol. viii., p. 2).

Among persons interested in pastoral pursuits Belltrees is a household word throughout Australia, but two reasons may be mentioned why it is historical—(1) Richard Hoddle, the year before he laid out the city of Melbourne, surveyed a portion of Belltrees estate for the grandfather of Mr. White; (2) John Gould, the great ornithologist, collected in the district, and stopped at Yarrundi, a few miles from Scone, at the residence of his brother-in-law, Mr. C. Coxen (a picture of this old home may be seen in *The Emu*, vol. viii., pl. 1).

Mr. H. L. White, as a boy, at Goulburn, N.S.W., had a small collection of odd end-blown eggs. It was not till latterly, during the last 12 or 14 years, that he thought of collecting scientifically. As Mr. Gregory M. Mathews (who, by the way, is a connection of Mr. White) hopes to figure all known Australian birds, so Mr.

White hopes to procure eggs and breeding information of the same. To this end, with commendable enterprise and at considerable expense, Mr. White has subsidized in the field such reliable collectors as H. G. Barnard (Queensland), S. W. Jackson (New South Wales), F. L. Whitlock (Western Australia), G. F. Hill (North-West Australia), and others. The collection thus acquired is undoubtedly a national one, and of the greatest value to its country. It is admitted that egg-collecting may be, and is sometimes, abused, but proper collecting is both scientific and popular ornithology. For, as Mr. Ray argues, "it would seem that equally as much of the science of *life* can be learned by the close study of the birds' habits, their eggs and nests, as by the study of their structure and their classification."

However, for all the material collected from home for Mr. White there is a "compensating balance." The broad acres (about 200,000) of "Belltrees" are a close sanctuary for all birds. In the five acres comprising the garden and orchard alone about 120 species are found during the year, a score of kinds remaining to breed. It is interesting to have Wood-Swallows (*Artamus*) nesting on one's gate-post, Pardalotes laying in hollow spouts placed within a summer-house, Honey-eaters and Flycatchers building in the fruit trees, &c. According to Mr. White's observations, the majority of birds is increasing, notably Magpie-Lark (*Grallina*), Spotted-sided Finch (*Stagonopleura guttata*), Tits (*Acanthizæ*), Crow and Magpie (*Gymnorhina*); but some species have decreased: the Emu is extinct; Stone (*Ædicnemus grallarius*) and Spur-winged Plovers (*Lobivanellus lobatus*) are scarce, no doubt due to the presence of foxes, 200 of which were poisoned on the estate one winter.

The critical examination of the oological collection, which now exceeds 800 Australian species, with data, together with over 1,000 bird-skins, occupied the best part of four days. The eggs are arranged in series, classified and registered, the work of arranging and recording having been most methodically and carefully performed by Mr. S. W. Jackson.* Any clutch of eggs that one chooses to name may be instantly inspected and its written data referred to, the arrangements are so excellent. The collections are contained in several handy cabinets, the drawers being divided, which adorn a spacious billiard-room (with fire-proof doors), where is also a library of ornithological works of reference, including Gould's great folio books.

It matters not where a visitor begins inspecting—beauty of form and colour, not to mention information, is found in every casket (*i.e.*, cabinet).

OBSERVATIONS.

We will follow no recognized scheme of classification, but simply

* After the pattern of the "Catalogue of the Jacksonian Collection," noticed in *Emu*, vol. vii., p. 201. (Mr. White acquired the Jackson collection.)

examine the cabinets as they come, and mention the most striking or important specimens.

The Pachycephaline sub-family at once attracts attention by the number of red (salmon-tinted) mutations among the normally-coloured sets of Thickheads or Whistlers, notably *Pachycephala gutturalis*, *P. rufiventris*, and its near relation, *P. falcata*, the eggs being pinkish and red spotted, like those of Honey-eaters. A beautiful photo. (Jackson) of the rare nest and eggs of *P. lanioides* is seen on pl. vii., *Emu*, vol. ix.

The study of the *Accipitres*, or Hawks, &c., would take a chapter to itself were we to describe all the striking sets, such as the marbled beauty of those of the Black-shouldered Kite (*Elanus axillaris*)—pl. xii., fig 6—one egg in each set being generally more marked on the smaller end; the rich pinkish-red sets of the Kestrel (*Cerchneis cenchroides*), some in exceedingly large clutches—six to eight eggs: the rich and heavily-marked specimens of the Osprey (*Pandion leucocephalus*)—examples are from the four sides of the continent, one set in particular, from near Mackay, being remarkable for its softly-coloured appearance. (In connection with a note by Mr. D. Le Souëf, C.M.Z.S., on Mr. White's collection, see photo. (Jackson) of the series of Ospreys' eggs.*) The Little Eagle (*Hieraëtus morphnoides*) is of special interest, because Gould himself discovered this fine bird in the district (Upper Hunter, 1839), as alluded to in the introduction; and the whitish eggs of the fierce Red Goshawk (*Erythrotriorchis radiatus*). It seems strange that the eggs of such a bird should be spotless.

Some sets of the various *Sericornes* are very similar to each other, but whether or not *Sericornis minimus* is merely a northern form of *S. frontalis*, its eggs differ considerably from those of the southern bird. The lengthened and acorn-like eggs of *S. citreigularis* are exceedingly singular.

The richly-coloured, reddish, and round eggs of the Tree-creepers (*Climacteris*) make a handsome show (examples, pl. xiii., figs. 11 and 16), except those of *C. leucophaea* (White-throated Tree- creeper), which are almost white. According to the science of oology, this species should be in a new genus. It certainly is not a true *Climacteris*. Attention was directed to this at the Hobart session (1903)† of the R.A.O.U. Mr. G. M. Mathews has since proposed the new genus *Neoclima* for the White-throated bird.‡

Regarding the Wood-Swallows (*Artamus*), in sets of three or four, none is wanting; but it is observed that, in the red-marked eggs of the closely allied species, *A. cinereus* and *A. melanops*, those of the former are slightly larger.

The divisions containing the bower-building birds are the eye of the collection—no words can describe their marvellous markings and variety. There are pure white eggs of the Golden Bower-

* *Emu*, vol. ix., pl. v. † *Emu*, vol. iii., p. 170).

‡ *Austral Avian Record*, vol. i., p. 115 (1912).

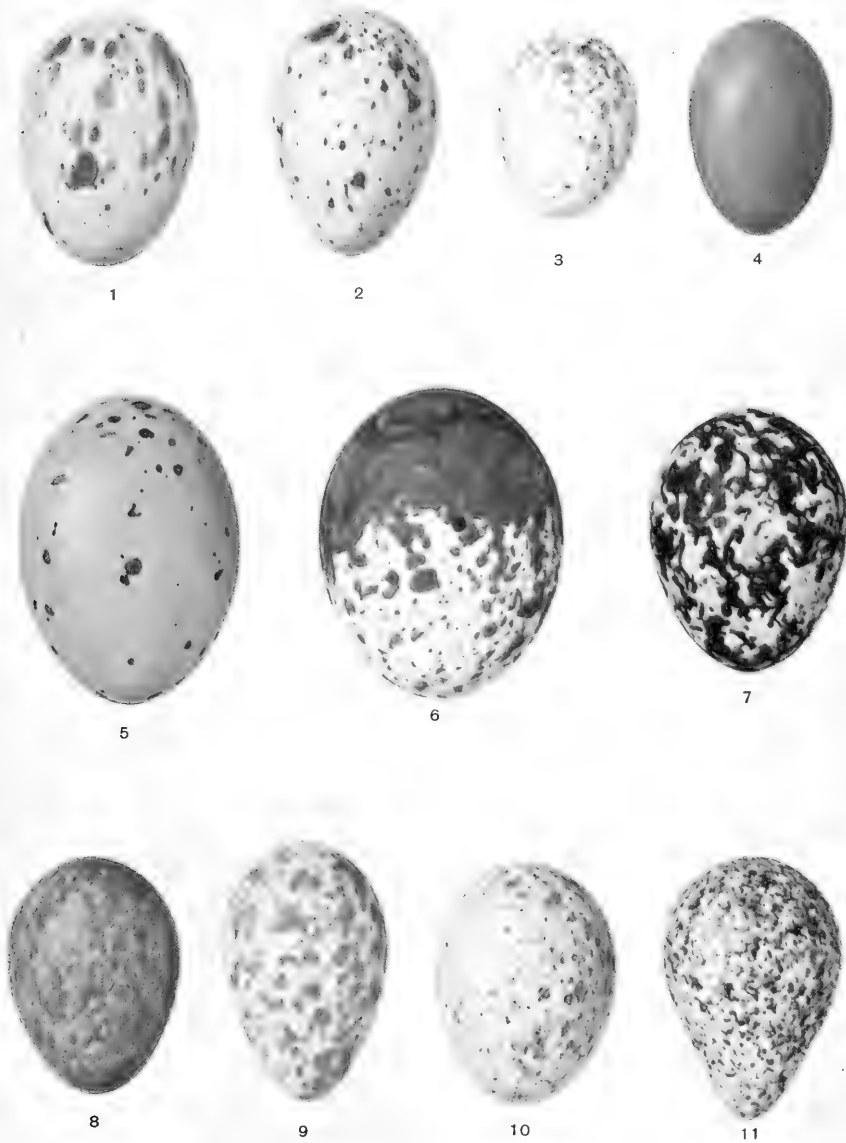
Bird (*Prionodura newtoniana*)—reference, *Emu*, vol. viii., pl. xxviii.—cream-coloured eggs of the Tooth-billed Bower-Bird (*Scenopæetes dentiostriis*)—reference, *Emu*, vol. viii., pls. xxxii. and xxxiv.—mottled eggs of the Satin Bower-Birds (*Ptilonorhynchus holosericeus* and *P. minor*), and a wonderfully linear-marked series of the Regent-Bird (*Sericulus chrysocephalus*)—see *Emu*, vol. ix., pl. v.)—and those of the *Chlamydera*, the Fawn-breasted (*C. cervini-ventris*) being the finest of the genus for its pronounced interlaced, line-like markings. Examples of all coloured Bower-Birds' eggs are figured on pl. xi., figs. 1 to 9. (In addition to these splendid natural illustrations, reference may be made to the fine half-tone blocks of nests with eggs from Mr. Jackson's negatives. For *C. guttata*, see *Emu*, vol. ix., pl. xxviii., and for *C. maculata*, *Emu*, vol. xii., pl. xii.)

Here are the smallest eggs in Australia, light buff in colouring, and measuring only $\frac{4}{100}$ inch by $\frac{3}{100}$ inch. They belong to the tiny Tree-Tits (*Smicrornis*); and the rare eggs of *Amytornis* are recognized by a remarkably good series of rich reddish sets (see pl. xiii., fig. 14).

These are succeeded by fine drawers of Shrike-Robins'. The "Fly" Robin (*Heteromyias cinereifrons*) appears oftener to lay a single egg than a pair. The familiar "Yellow" Robins' (*Eopsaltria*) eggs are most beautiful by reason of their greenish shade and complementary red markings. Here, again, oology scores. The uniform olive-coloured eggs of *E. leucogaster* (White-breasted Shrike-Robin) do not resemble those of true *Eopsaltria* ("By their fruits ye shall know them"); therefore, that species should be assigned to a different genus—namely, *Amaurodryas*—as has been done by the "Check-list" Committee of the R.A.O.U. (1913). After calling it a *Pachycephala* in his "Reference-list," p. 317, Mr. G. M. Mathews has created for the species the new genus, *Quoyornis*.* Other members of the large and varied family *Muscicapidae* are equally interesting. Those, for instance, of the genus *Arses*, with their tiny hammock-like nests, that lay pearly, red-marked eggs, as do the *Monarcha*, but depositing their eggs in cup-shaped nests, beautifully built of green mosses. From this latter group the Shining Flycatcher (*nitidus*), with its greenish-white eggs (see pl. xiii., fig. 15), resembling somewhat those of the familiar Fantail (*Rhipidura molacilloides*), obviously differs, and should be retained under its original genus—*Piezorhynchus*—as shown on the R.A.O.U. "Check-list."

The glorious glossy dark green and umber marked eggs, in sets of from one to three, according to the species, of the various Cuckoo-Shrikes (*Graucali*) always attract attention for their extreme beauty. But a set of four of the Ground Cuckoo-Shrike (*Pteropodocys phasianella*), in mottled "picked green," has the pride of place in the exceptionally fine series in the Belltrees collection. (Pl. xii., fig. 8.)

* *Austral Avian Record*, vol. i., p. 111 (1912).



1—*Cracticus rufescens*.
2—*Sphecothebes flaviventris*.
3—*Colluricincla boweri*.
4—*Porzana palustris*.
5—*Eurostopodus albobularis*.
6—*Elanus axillaris*.
7—*Rhynchaea australis*.
8—*Pteropodocys phasianella*.
9—*Tropidorhynchus buceroides*.
10—*Oreocicla cuneata*.
11—*Pedionomus torquatus*.

Among the "blue beauties" are the eggs of *Zosterops*, in lustrous triplets of delicate greenish-blue—or are they bluish-green? The remarkable Coachwhip-Birds (*Psophodes*) lay remarkable eggs of a pale bluish shade, marked with a few hieroglyphics and commas. A specimen of *P. crepitans* is given (pl. xiii., fig. 7), also a similar beautiful egg of the Wedgebill (*Sphenostoma cristatum*) is figured (pl. xiii., fig. 13).

Orioles' eggs are easily recognized by their artistic shining and stony shades splashed with umber, while those of the Fig-Birds (*Sphecotheres*) are studies in rich reds and greens. For an example of *S. flaviventris* see pl. xii., fig. 2.

The Honey-eaters' (family *Meliphagidæ*), mostly salmon-tinted eggs, are bewildering for their number, variety, and beauty. Of the graceful *Ptilotes*, there may be mentioned *P. macleayana*, rare and reddish (pl. xiii., fig. 12); the common *P. fusca*, with few markings, but richly coloured; *P. versicolor*, resembling much the familiar eggs of *P. sonora* (Singing Honey-eater), delicate, and almost uniform in colour, merely a pinkish blush; while the scarce *Xanthotis filigera* (Streak-naped Honey-eater) shines with red speckles. The *Myzanthæ* are full flushed in colouration; the similarity of *M. flavigula* and *M. lutea* strongly show their sub-specific connection, and, together with *M. obscura*, appear oologically separate from the common Miner, *M. garrula*.

Among the Friar-Birds the splendid series of *Tropidorhynchus buceroides* (pl. xii., fig. 9) is most captivating, and their bold and brilliant reds, as in the case of the Miners, serve to differentiate it from its congeners, the eggs of which have lovely lilac markings, and are of soft appearance. Therefore, on oological grounds, Mr. Mathews would appear to have reasons for generically subdividing the Friar-Birds (see *Austral Avian Record*, vol. i., p. 117).

The true Thrushes (*Turdidæ*) betray their kind in complementary shades of greens mottled with reds. For a fine example of *Oreocincla cuneata* (Broadbent Ground-Thrush) see pl. xii., fig. 10.

Drongo-Shrikes (*Chibia bracteata*) are very striking specimens, illuminating the trays with pinkish-red quartets.

The Grallina, or Magpie-Lark, is a truly Commonwealth bird, because found common in every State, except, perhaps, Tasmania, and this "Commonwealth Collection" possesses many sets of its eggs (several fives), varying in colour from white to rich reddish-buff speckled with purple. One peculiar set of four is altogether white.

The *Calamanthi* (Field-Wrens), notably *montanellus*, are coffee-coloured and lustrous, while the Speckled Warbler (*Chthonicola sagittata*) is singular in appearance and chocolate-coloured (pl. xiii., fig. 17).

The *Sphenuræ* (Bristle-Birds) eggs are reddish, and so rare and beautiful that two—*S. broadbenti* and *S. brachyptera*—are figured (pl. xiii., figs. 5 and 6).

The eggs of the forest-loving birds appeal to one's imagination

through thoughts of fern-gullies full of the fragrance of wattle and of sassafras, where they build—the Lyre-Birds (*Menura*) with their single elliptical, purplish egg, the Pilot-Bird (*Pycnophilus*), with its leaden-coloured pair (pl. xiii., fig. 10), and the mimicking Scrub-Bird (*Atrichornis*), which wakes up the sylvan solitudes with loud, resounding calls, and lays its precious pair in a nest lined with *papier-mache*. The only two nests yet discovered were found by the perseverance of Mr. S. W. Jackson. For character of eggs see pl. xiii., fig. 9.

Pittas' eggs are in complements of threes or fours, excellent in appearance, being round, pearly, and prettily spotted.

The socialistic *Corcorax* (White-winged Chough) has the completed number (seven) to the set. In one nest kept under observation *five* eggs were deposited in *three* days. The Shining Starling, or Calornis (*Aplonis metallica*), is another socialistic bird, nesting in companies, although not laying in one nest. Selected sets of eggs (four) are light green and pink-spotted—rare objects of delicate beauty.

The Rifle-Birds (*Ptiloris*) and Trumpet-Bird, or Manucode (*Phonygama gouldi*)—really Birds-of-Paradise—possess most beautiful eggs, and the Belltrees collection is rich with rare specimens. Those of the Manucode are spotted and pink-striped (pl. xiii., fig. 1), whereas those of the Rifles are striped—some from end to end—with reddish-chestnut or olive, as if hand-painted with a fine brush (pl. xiii., figs. 2 to 4; and for picture of the nest and eggs of Victoria Rifle-Bird see *Emu*, vol. viii., pl. xxxv.)

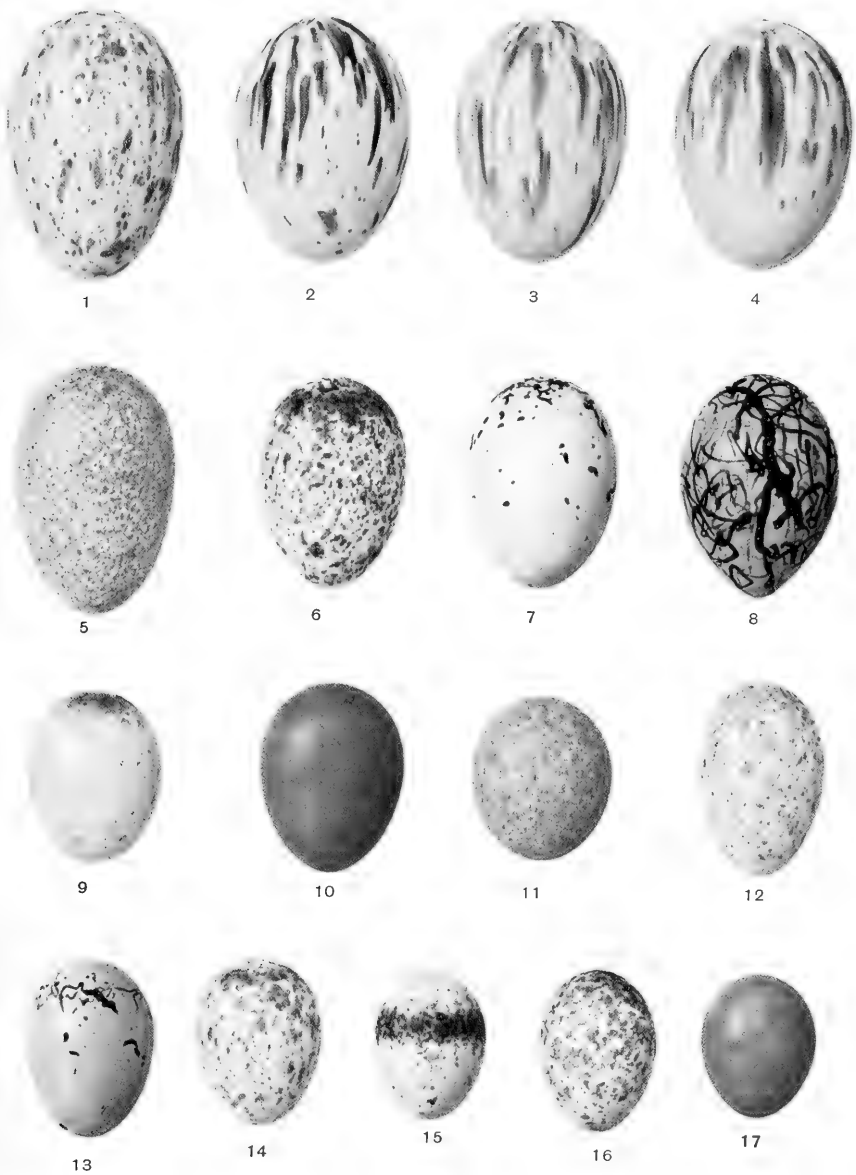
Streperas, or Bell-Magpies, are unusually well represented, making a large and most interesting series, the rich chocolates of *S. graculina* being particularly striking, while one type resembles in an extraordinary degree those of the common Magpie (*Gymnorhina*).

The greens, mottled and splashed with sepia, of the Crows and Raven (*Corvus*), common as they are, always please one. There are many sets of sixes, and in one instance seven, all true ovals in shape. A large collection of both birds' demonstrates the fact that the Crows' are pale-coloured (bluish ground), while the Ravens' are darker (more greenish ground).

Grass-Warblers' (*Cisticolæ*) and Grass-Birds' (*Megaluri*) are contrasts in colour, the eggs of the former being greenish, slightly spotted, the latter exceedingly pretty, spotted with pink.

The Shrike-Thrushes' eggs (*Colluricincla*) form one of the "sights of the show," being comparatively large, of pearly appearance, and slightly spotted; but the markings on *C. boweri* are somewhat red (see pl. xii., fig. 3).

Eggs of Australia's feathered favourites—the Magpies (*Gymnorhina*)—furnish three well-filled drawers, making a marvellous series, which could not be surpassed, of chiefly reds on greenish grounds. Those of the Western form (*G. dorsalis*), however, are the most uniform, as has been stated by Mr. White himself (*vide Emu*, vol. xiii., p. 48), and the most brilliant (reddish) of the tribe



1—*Phonygama gouldi*.
 2—*Ptiloris alberti*.
 3—*P. victorie*.
 4—*P. paradisica*.
 5—*Sphenura broadbenti*.
 6—*S. brachyptera*.

7—*Psophodes crepitans*.
 8—*Parra gallinacea*.
 9—*Atrichornis rufescens*.
 10—*Pycnophilus floccosus*.
 11—*Climacteris scandens*.
 12—*Ptilotis macleayana*.

13—*Sphenostoma cristatum*.
 14—*Amytornis megalurus*.
 15—*Piezorhynchus nitidus*.
 16—*Climacteris superciliosa*.
 17—*Chthonicola sagittata*.

For illustrations and remarks by Mr. A. F. Basset Hull on varied types of eggs of *G. tibicen* see *ante*, p. 15, pl. v., figs. 1 to 9.

Among the Butcher-Birds (*Cractici*), the Black (or Brown) species, *C. quoyi* (*rufescens*), varies most—from light olive to a bluish-grey ground, with bold, roundish spots—and resemble those of a variety of *Gymnorhina*, but, of course, are smaller in size (pl. xii., fig. 1).

A good chapter could be well written on the Cuckoos and their long and varied list of foster-parents. In many instances the eggs assimilate in colouring; but it is a pretty contrast where the red-speckled Bronze-Cuckoo's (*Chalcococcyx basalis*) is seen in combination with the uniform bluish eggs of the White-eye (*Zosterops dorsalis*), or with a greenish set of Grass-Warblers' (*Cisticola exilis*). The large Channelbill Cuckoo (*Scythrops*) is supposed to be partial to Crows' nests, but there is a pair of Channelbill eggs in a set of *Strepera graculina*, which the great Cuckoo's eggs much resemble in colour and in size. Apparently the Belltrees collection contains many foster-parents not yet recorded. Perhaps Mr. White, at some early date, will compile a complete list for *The Emu*. Such a list would be as interesting as it would be valuable. The collection at present contains the magnificent number of 250 different combination clutches, not including duplicates.

Many cabinets gleam with the white eggs, showing considerable variation in shape and size, of the long list of Cockatoos and Parrots, which need only be mentioned. The same applies to Pigeons.

Coming to the more terrestrial forms, the *Charadriidæ*, or Plover family, are most fascinating, especially the richly-coloured quartets, such as, for example, those of Avocets and Stilts (sub-family *Himantopodinae*). Then there appear the remarkable peg-top-shaped Sandpipers', &c. (*Totantinae*), stone-coloured and variously marked, suggestive of sand and shingle surroundings. One notices at once the comparatively large and heavily-marked (purplish-brown) eggs of the Snipe (*Gallinago australis*), which breeds in far-off Japan; likewise those of the Painted Snipe (*Rhynchæa australis*), from the interior provinces, dark-coloured and curiously daubed, as if with sepia or Chinese ink (pl. xii., fig. 7). Mention should also be made of the numerous pairs of Stone-Curlews (*Edicnemus grallarius*), tinted according to soil and situation where found—beautiful studies of environment—olive, from the alluvial plains of Riverina; red, reddish-brown, or chocolate, from other localities; while smallness of markings indicates sandy regions.

In the examples of eggs of the "Native Companion," or Crane (*Antigone*), usually a pair, slightly spotted, there is one set of three, while some of the Queensland eggs are uniformly white.

The various Herons' (*Ardeidæ*), in full sets of fours or fives, furnish the cabinets with exquisite shades of light greens or blues. The largest and strongest (though light green) are the eggs of

the scarce *Ardea sumatrana* (Great-billed Heron), taken in Australia; then there are those eggs of the much-abused (for feminine fashion) White Herons (Egrets), round in form and delicate greenish-blue in hue, as spotlessly perfect as the parents themselves.

In keeping with the surpassing excellence of the collection, the clutches of Quails (or Quails so-called) are very full. One Swamp-Quail (*Synoicus australis*) clutch has a maximum complement of fourteen eggs, and one of its Tasmanian ally (*S. diemenensis*) has a splendid set of thirteen, while the sets (five) of the Least Swamp-Quail (*Excalfactoria australis*) appear rich in darker olive colouring. The unique Plain-Wanderer (*Pedionomus torquatus*) has such remarkably shaped eggs that one is figured on pl. xii., fig. 11.

From an oological point of view there are many object lessons to be learnt in the study of the *Rallinæ* (Rails). The pearly and pink eggs of *Amaurornis* decide it to be a Rail rather than a Gallinule, and the two Native-Hens (*Tribonyx*) might be generically separated, while the olive-like eggs of *Porzana palustris* (pl. xii., fig. 4) should be differentiated from the Rail-like eggs of the Spotted Crake (*P. fluminea*)*.

The eggs, in quartets, of the Jacana (*Parra gallinacea*), rich stone colour with interlacing loops and linear markings, much resemble polished agates (see pl. xiii., fig. 8).

Grebes (family *Podicipedidæ*) are well represented by chalky-surfaced specimens in various shades of staining according to the length of incubation or the number of times the eggs have been covered with wet weeds when the birds went "from home."

There is a realm of romance about the many sea-birds', especially the Terns' (*Sterninæ*). The writer's own recollections of the far-famed Abrolhos Shoals awake as splendid series of "Sooties'" (*Onychoprion fuliginosa*) and the "Noddies'" (*Anous stolidus* and *A. melanops*), are reviewed, not to mention the common Crested Tern's (*Sterna cristata*), with endless variety of hieroglyphic markings, and the doublets of the Graceful Tern (*S. gracilis*), that are dumped on grey, dead coral strands.

Gulls' eggs are familiar objects, but the interest of the series of Silver Gulls' (*Larus novæ-hollandiæ*) is enhanced by remarkable mutations of reddish colouring and bluish.

Some of the chalk-encrusted eggs of Gannets (*Sulidæ*) are much stained—some strikingly so, being rusty-red, soiled by earth composed of oxidized iron. Other specimens show their limy surface has been nibbled by crabs.

Of the great order of *Procellariiformes*, or Petrel-like birds, the various Albatrosses and Petrels' eggs are exceedingly fascinating, with the suggestive musty odour of some, from far-away bald and bleak islets in Southern Seas. An egg of the Cape Petrel (*Daption capensis*) comes from Laurie Islands, collected by a

* Previously mentioned in "Another Decade Austr. Oology," *Emu*, vol. iii., p. 171.

Scottish expedition to the far South. It would be interesting to know why eggs of some of the Albatrosses and of the Storm-Petrels are freckled on their larger ends.

Fine, clean, and complete clutches represent the Duck family (*Anatinae*), all more or less greasy to the touch—a wise provision of nature to protect the contained embryo from the dampness of their usual surroundings—not that all Ducks breed upon the ground, or in swamps: many seek high and dry places in hollow trees, as the abundant data of the Belltrees collection prove. Of the two Whistling-Ducks, *Dendrocygna arcuata* lays the larger eggs (nine or ten to a set). The splendid Rajah Shieldrake (*Tadorna rufigerum*) has a maximum of eleven eggs, while the little Grey Teal (*Nettion gibberifrons*) lays occasionally as many as thirteen! The two “spiny-tailed” species (*Erismaturinae*)—the Musk-Duck (*Biziura lobata*) and the rarer Blue-billed Duck (*Erismatura australis*)—lay smaller clutches, but comparatively larger eggs, which are somewhat coarse-grained and greenish in tone. The number ranges from two to five. A fine full set of the Blue-billed species is from the Lower Murray (S.A.), collected by Captain and Mrs. White.

Among the largest and most handsome of the eggs of the world are those of the Cassowary (*Casuarus australis*). For nests *in situ* see *Emu*, vol. xii., pls. xxi. and xxii. Light green in colour, in splendid sets, showing much variation, these eggs make outstanding features of the already great collection, while last, but not least (because now first in the approved classification) are the dark greens of the Emus (*Dromaius novæ-hollandiæ*), one champion clutch having fourteen eggs! With tenderest care we are permitted to handle an authenticated egg of the defunct Tasmanian Emu (*D. diemenensis*)—probably the rarest item of the whole collection.

CONCLUSION.

To give an adequate idea of the completeness of this national oological collection at Belltrees—of which the foregoing observations are merely a sketch—it may be stated that, according to the “Official Check-list of the Birds of Australia,” there are enumerated between 800 and 900 species and sub-species, not including those of the “Provisional List.” Of that number, Mr. White lacks about 8 per cent. only, or some 70 kinds. This is a great achievement, and at the present rate of progress the end—*i.e.*, eggs for every known species—is in sight. In my article “Another Decade in Australian Oology” (*Emu*, vol. iii., pp. 168–171, 1903), I ventured the opinion that eggs of all our known birds would be collected in the succeeding decade. That is practically so. Excepting the Petrels in their out-of-the-way homes, and the far northern migrants, the chief and more strictly Australian desiderata are *Leucotreron alligator*, *Notophox flavirostris*, *Cyclopsitta coxeni*, *Geopsittacus occidentalis*, *Chalcococcyx russata*, *Atrichornis clamosa*, *Falcunculus whitii*, *Ashbyia lovensis*, *Malurus whitii*, *Amytornis woodwardi*, *Amytornis goyderi*, *Zosterops*

tephropleura, *Melithreptus vinitinctus*, and *Stigmatops albi-auricularis*.

Finally, my best thanks, as well as the indebtedness of all students in ornithology, more especially in oology, are due to Mr. H. L. White for so generously defraying the great expense of etching the excellent tricoloured photo.-blocks wherewith to illustrate this article, and to Mr. S. W. Jackson for his careful attention to the rare and valuable eggs entrusted to him by Mr. White while the specimens were being photographed, at Sydney, by Messrs. S. W. Bacon & Co. Limited.

Description of a New *Sericornis*.

BY C. F. COLE, R.A.O.U.

THE following is a description of a new Scrub-Wren obtained during a visit to Forsyth Island (Furieux Group), Bass Strait, with several other members of the working camp-out of the R.A.O.U. on Barren Island, during November, 1912:—

Male.—Head, nape, hind neck, and mantle uniform reddish-brown; back, rump, upper tail coverts, and tail feathers much darker, being a rich reddish-brown. Tail feathers with no distinct sub-terminal band. Wing uniform reddish-brown, the outer webbing of the primaries having a distinct greyish tinge. Spurious wing coverts dark brown, faintly tipped with white, a few of the feathers having the inner webbing margined with white. Chest dusky-brown, with a pronounced yellowish tinge. Breast and abdomen pale yellow; side of breast dusky-brown; flanks reddish-brown. Under tail coverts brown, being margined paler at the tips. Chin and cheeks ashy-grey, indistinctly mottled with dusky brown. Throat and lower throat ashy-grey, with dark brown centres to the feathers. Ear coverts dusky-brown, having the quills ashy-grey. Lores dusky-brown, indistinctly mottled ashy-grey. Forehead reddish-brown, mottled with ashy-grey, giving a distinctive scaly appearance. Irides grey-hazel. Bill black. Legs and feet brown.

Female.—Similar to foregoing.

Dimensions in millimetres:—Total length, 124; wing, 54; tail, 47; bill, 11; tarsus, 19.

I propose provisionally the name *Sericornis insularis*, and, as a vernacular, Forsyth Scrub-Wren.

Habitat.—Forsyth, Cape Barren, and Clarke Islands.

Observations.—This bird was fairly numerous upon the island, as many as five being flushed at one time. The birds keep close to the ground, amongst the thick vegetation. Upon being flushed they dart to the top of a low bush, giving utterance to a few short, startled notes of danger, and immediately seek cover again. Several specimens were secured, and upon dissection the type female was found to be breeding.

An apparently old nest found was situated in a small, densely-

foliated shrub about 5 feet from the ground, and was built chiefly of fine grass, and lined with downy feathers, representative of several forms of bird-life. The nest resembled somewhat in shape that of *Sericornis citreogularis*, but was much smaller and more compact, the neck or dome-like structure being woven amongst the foliage and extending vertically above the body of the nest about 12 inches, giving to the whole a banjo shape. Entrance upon the side of the body or lower structure of the nest.

Birds of Moora (W.A.) and District.

By C. L. E. ORTON AND P. T. SANDLAND, Ms.R.A.O.U.

A LIST of birds identified within a 30-mile radius of Moora is given herewith. The country in the immediate vicinity of Moora is flat, covered mostly with salmon and white gum (eucalypts) and undergrowth. Further east it becomes more hilly, the timber being then mostly jam, manna (both acacias), and York gum, with occasional belts of salmon gum and white gum, the latter occurring on any ironstone hills. Going west from Moora there is a large belt of sand-plain and gravelly ironstone country. Ten miles out the red gum country begins, and from there on the country is totally different, as well as the timber. Certain birds occur there which are never seen near Moora, and there is also a small "local migration" among some species.

There is a post-office 22 miles west, Dandaragan by name. The rainfall there is about 27 inches; at Moora it is 18½; and 30 miles east, at Wongan Hills, about 12 inches. But no records have been kept for any length of time at the last place. From the difference in rainfall it may be judged that the timber would vary considerably, and with it certain forms of bird-life. Also, close to Moora there are several swamps, which last all through the summer after wet winters. Further west the swamps are permanent. Practically no water has run here during the last two winters, so that we have had to go upwards of 50 miles west when out Duck-shooting. A party went out last January and found Ducks in hundreds; but the swamps are so thick with tea-tree that it is a difficult matter to find fallen birds.

Moora is shown only on the more recent maps. It is on the Perth-Geraldton line, 108 miles from Perth, and about 60 miles from the coast in a direct line. The railway line itself was built by an English company on the land-grant system.

Dromaius novæ-hollandiæ. Emu.—Becoming rarer each year; once very plentiful.

Leipoa ocellata. Mallee-Fowl.—A rare bird, occurring 30 miles east; more plentiful in the early days.

Coturnix pectoralis. Stubble-Quail.—Uncommon.

Turnix velox. Uncommon.

Geopelia tranquilla. Ground-Dove.—Seen occasionally 20 miles west.

Phaps chalcoptera. Bronze-winged Pigeon.—Plentiful some years back, but becoming very scarce on account of advancing settlement.

Tribonyx ventralis. Black-tailed Native-Hen.—Plentiful some seasons.

Porphyrio bellus. Blue Bald-Coot.—A few seen on swamps after wet seasons.

Fulica australis. Coot.—Seen on swamps after wet seasons.

Podiceps gularis. Black-throated Grebe.—Fairly common on swamps.

Zonifer tricolor. Black-breasted Plover.—Becoming plentiful as clearing advances.

Ægialitis nigrifrons. Black-fronted Dottrel.—Fairly common.

Himantopus leucocephalus. White-headed Stilt.—A few birds seen on swamps in wet seasons.

Œdienemus grallarius. Southern Stone-Curlew. — Rare ; once plentiful.

Choriotis australis. Bustard.—Very plentiful at times.

Carphibis spinicollis. Straw-necked Ibis.—Seen occasionally in flocks during winter.

Notophoxyx novæ-hollandiæ. White-fronted Heron.—Very common.

Notophoxyx pacifica. White-necked Heron.—Rare.

Botaurus poiciloptilus. Bittern.—A few birds in swamps.

Chenopsis atrata. Black Swan.—Rare.

Casarca tadornoides. Chestnut-breasted Shieldrake.—Rare.

Anas superciliosa. Black Duck.—Very common.

Nettion gibberifrons. Grey Teal.—Very common.

Nettion castaneum. Chestnut-breasted Teal.—Obtained one bird when Duck-shooting.

Stictonetta nævosa. Freckled Duck.—Uncommon.

Nyroca australis. White-eyed Duck.—Uncommon.

Erismatura australis. Blue-billed Duck.—Uncommon.

Biziura lobata. Musk-Duck.—Uncommon.

Phalacrocorax sulcirostris. Little Black Cormorant.—Uncommon.

Phalacrocorax melanoleucus. Little Pied Cormorant.—Common. Breeds in tea-tree swamps in wet seasons.

Circus gouldi. Allied Swamp-Hawk.—Uncommon.

Astur approximans. Goshawk.—Fairly common.

Accipiter torquatus. Collared Sparrow-Hawk.—Fairly common.

Uroaëtus audax. Wedge-tailed Eagle.—Odd pairs seen.

Hieraëtus morphnoides. Little Eagle.—Fairly common during breeding season ; very rare at other times.

Falco subniger. Black Falcon.—Extremely rare.

Falco lunulatus. Little Falcon.—Rare.

Hieracidea berigora. Brown Hawk.—Rare.

Hieracidea orientalis. Striped Brown Hawk.—Common during breeding season ; rare during summer months.

Cerchneis cenchroides. Nankeen Kestrel —Uncommon.

Ninox ocellata. Marbled Owl.—Uncommon.

Glossopsitta porphyrocephala. Purple-crowned Lorikeet. — Very common when eucalypts flower.

Calyptorhynchus baudini. White-tailed Cockatoo. — Common. Absent during the summer from close round Moora. All birds leave during November or early in December, and go out on to the sand-plain country towards the coast. Return to Moora in flocks after the first rains. Immediately pair off, and commence hunting for suitable nesting-places in the salmon gum forests. Usually occupy a month or six weeks preparing the hole before laying. According to seasons, eggs may be obtained from the latter end of July to middle of October. Clutch usually two, occasionally one. Have never seen more than one young bird in nest.

Calyptorhynchus naso. Red-tailed Cockatoo.—Small flocks often seen in red-gum country towards the coast during summer, but go further north to breed.

Cacatua roseicapilla. Rose-breasted Cockatoo.—Small flocks seen occasionally, but never remain here for more than a few hours.

Licmetis pastinator. Western Long-billed Cockatoo —Very common 20 miles west of Moora during summer. Breed further north.

Calopsitta novæ-hollandiæ. Cockatoo-Parrot.—Seen in flocks occasionally during the autumn.

Polytelis melanura. Black-tailed Parrot.—Visits district from January until first winter rains fall.

Platycercus icterotis. Yellow-cheeked Parrot.—Fairly common. In nesting habits opposite to *Calyptorhynchus baudini*, for it returns to district always about Christmas time, and odd birds stay as late as July, but they nest in red gum country west of Moora.

Barnardius semitorquatus. Yellow-collared Parrot.—Common west of Moora. None seen within 10 miles of the town.

Barnardius zonarius. Yellow-banded Parrot.—One of the commonest birds. An unmitigated pest in orchards.

Melopsittacus undulatus. Warbling Grass-Parrot. — Occasional visitors in spring, often in company with *Artamus personatus*, and breeds at odd intervals.

Podargus brachypterus. Short-winged Frogmouth.—Common.

Halcyon sanctus. Sacred Kingfisher.—Very common in breeding season.

Merops ornatus. Bee-eater.—Very common in breeding season

Cypselus pacificus. White rumped Swift.—Seen at rare intervals flying south.

Chætura caudacuta. Spine-tailed Swift.—Seen at rare intervals flying south.

Cuculus pallidus. Pallid Cuckoo.—Very plentiful during breeding season. Foster-parents :—*Rhipidura motacilloides*, *Artamus cinereus*,

Grallina picata, *Melithreptus chloropsis*, *Glyciphila fulvifrons*, *Ptilotis sonora*, *P. ornata*, *P. carteri*, *Myzanthia obscura*, *Anthochaera carunculata*, *Lalage tricolor*.

Cacomantis flabelliformis. Fan-tailed Cuckoo.—Rather rare. Foster-parent, *Pyrrholæmus brunneus*.

Mesocalius ocellatus. Black-eared Cuckoo.—Very rare. Foster-parent, *Pyrrholæmus brunneus*.

Chalcococcyx basalis. Narrow-billed Bronze-Cuckoo.—Rare. Foster-parents:—*Malurus splendens*, *Glyciphila fulvifrons*, *Acanthiza chrysorrhoa*.

Chalcococcyx plagiatus. Bronze-Cuckoo.—Very common. First birds usually appear in July. Foster-parents:—*Acanthiza chrysorrhoa*, *A. apicalis*, *Zosterops gouldi*, *Smicrornis brevirostris*.

Hirundo neoxena. Swallow.—Rather rare.

Cheramœca leucosternum. White-backed Swallow.—Odd birds seen at intervals flying very high.

Petrochelidon nigricans. Tree-Martin.—Very plentiful.

Petrochelidon ariel. Fairy Martin.—Rare.

Micrœca assimilis. Allied Brown Flycatcher.—Common.

Petroica campbelli. Western Scarlet-breasted Robin.—Odd birds seen in red gum country.

Petroica goodenovii. Red-capped Robin.—Common.

Melanodryas bicolor. Hooded Robin.—Rather rare.

Smicrornis brevirostris. Short-billed Tree-Tit.—Very plentiful, especially among suckers in ringbarked eucalypt belts.

Gerygone olivacea. Southern Fly-eater.—Uncommon.

Eopsaltria griseogularis. Grey-breasted Shrike-Robin.—Very rare.

Falcunculus leucogaster. White-bellied Shrike-Tit.—One bird seen in four years.

Pachycephala rufiventris. Rufous-breasted Whistler. — Very common.

Rhipidura preissi. Western Fantail.—Appears with first rains, and leaves during August.

Rhipidura motacilloides. Black-and-White Fantail.—Very common.

Seisura inquieta. Restless Flycatcher.—Not so common.

Pteropodocys phasianella. Ground Cuckoo-Shrike.—Seen occasionally.

Graucalus melanops. Black-faced Cuckoo-Shrike.—Very common.

Campephaga humeralis. White-shouldered Caterpillar-eater.—Very plentiful from September till January, odd birds remaining till April.

Pomatorhinus superciliosus. White-browed Babbler.—Common.

Cincloramphus cruralis. Brown Song-Lark.—Never very plentiful.

Cincloramphus rufescens. Rufous Song-Lark.—Very numerous from September until January or February.

Ephthianura albifrons. White-fronted Bush-Chat.—Becoming more

plentiful as clearing advances. Found nests last season for first time in district.

Acrocephalus gouldi. Long-billed Reed-Warbler.—Rare near Moora. Found it plentiful in tea-tree swamps 45 miles west of Moora. Found two nests containing young birds and one with fresh eggs in middle of January. Nests were built in tea-tree shoots over water.

Acanthiza inornata. Western Tit-Warbler. Rare.

Acanthiza chrysorrhoa. Yellow-tailed Tit-Warbler.—Extremely plentiful.

Acanthiza uropygialis. Chestnut-rumped Tit-Warbler.—Common in salmon gum (eucalypt) belts.

Acanthiza apicalis. Broad-tailed Tit-Warbler.—Nearly as plentiful as *A. chrysorrhoa*. Nests rather hard to find.

Pyrrolæmus brunneus. Redthroat.—Occurs only in certain patches of thick saplings and undergrowth.

Malurus splendens. Banded Wren-Warbler.—Rare near Moora. More plentiful further west and south.

Malurus cyanotus. White-winged Wren-Warbler.—Rare.

Malurus elegans. Red-winged Wren-Warbler.—Rare.

Artamus personatus. Masked Wood-Swallow.—Visits district at odd intervals. Very plentiful last spring.

Artamus c. nereus. Grey-breasted Wood-Swallow.—Very plentiful; Stationary.

Artamus sordidus. Wood-Swallow.—Not so common. Stationary.

Colluricincla rufiventris. Buff-bellied Shrike-Thrush.—Uncommon.

Grallina picata. Pied Grallina.—One of the commonest birds.

Neositta pileata. Black-capped Tree-runner.—Families often noticed.

Climacteris rufa. Rufous Tree-creeper.—Fairly common. Disappearing as the country is cleared

Zosterops gouldi. Grey-backed White-eye.—Common.

Dicæum hirundinaceum. Mistletoe-Bird.—Only seen from January till May or June.

Pardalotus striatus. Red-tipped Pardalote.—Common.

Pardalotus punctatus. Spotted Pardalote.—Rare.

Melithreptus chloropsis. Western White-naped Honey-eater.—Fairly plentiful in winter; seldom seen during summer.

Acanthorhynchus superciliosus. White-browed Spinebill.—Rare.

Glyciphila fulvifrons. Tawny-crowned Honey-eater.—Common on sand-plain country.

Glyciphila albifrons. White-fronted Honey-eater.—Visits here in large numbers during March and April, in odd years, to feed on the white gum blossoms.

Stigmatops ocularis. Brown Honey-eater.—Common.

Ptilotis sonora. Singing Honey-eater.—Not very plentiful.

Ptilotis ornata. Yellow-plumed Honey-eater.—Common in salmon gum belts.

Ptilotis carteri. Carter Honey-eater.—Uncommon.

Mellornis longirostris. Long-billed Honey-eater.—Common round tea-tree swamps further west.

Myzantha obscura. Dusky Miner.—Common.

Anthochaera carunculata. Red Wattle-Bird.—Very plentiful from April to November. Nearly all birds absent from here during remaining months.

Anellobia lunulata. Little Wattle-Bird.—Very rare.

Acanthogenys ruficularis. Spiny-cheeked Honey-eater.—Same as *Glyciphila albifrons*.

Anthus australis. Pipit.—Very common, especially round cleared country.

Tæniopygia castanotis. Chestnut-eared Finch.—Uncommon.

Corvus australis. Raven.—Extremely plentiful; destructive to lambs.

Strepera plumbea. Leaden Bell-Magpie.—Not very plentiful. Very local in habits.

Cracticus nigrogularis. Black-throated Butcher-Bird.—Seen in district for first time last year.

Cracticus leucopterus. White-winged Butcher-Bird.—Very common.

Gymnorhina dorsalis. Varied Magpie.—Very common.

The Black-eared Cuckoo (*Mesocalius palliolatus*, Lath.) *= ~~Mesocalius~~*

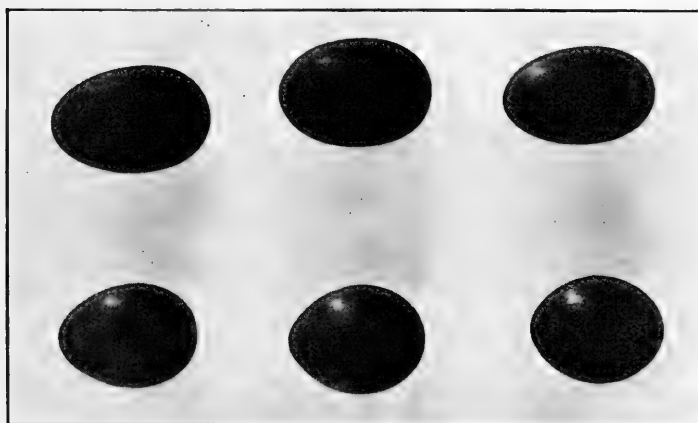
BY P. A. GILBERT AND H. KEANE, Ms.R.A.O.U.

THE first authentic evidence of the presence of the Black-eared Cuckoo in the County of Cumberland, New South Wales, was "an immature specimen procured by Mr. L. Harrison at Manly on 13th January, 1906." * Since that date oological confirmation has been obtained by us. At Flemington, 9 miles west of Sydney, on 16th August, 1908, we found a nest of the little Field-Wren (*Chthonicola sagittata*, Lath.), which contained three eggs. Being an odd-looking set, they were submitted to Mr. A. J. North for examination, and he identified one of them as the egg of *M. palliolatus*. This is the first egg recorded in the County of Cumberland, and is now in Mr. H. Keane's collection. The following are some records:—

- 31/8/08.—One Black-eared Cuckoo's egg and one egg of Little Field-Wren, Flemington, N.S.W.
- 23/10/09.—One Black-eared Cuckoo's egg and one egg of Little Field-Wren, Flemington, N.S.W.
- 17/9/10.—One Black-eared Cuckoo's egg and two young Field-Wrens, Flemington, N.S.W.
- 10/12/10.—One Black-eared Cuckoo's egg and two eggs Little Field-Wren, Blacktown, N.S.W.

* "Records Aust. Museum," vol. vi., No. 5.

- 19/8/11.—One Black-eared Cuckoo's egg and two eggs Little Field-Wren, Flemington, N.S.W.
14/9/11.—One Black-eared Cuckoo's egg and two eggs Little Field-Wren, Flemington, N.S.W.
16/9/11.—One Black-eared Cuckoo's egg and two eggs Little Field-Wren, Flemington, N.S.W.
26/11/11.—One Black-eared Cuckoo's egg and two eggs Little Field-Wren, Blacktown, N.S.W.
14/9/12.—One Black-eared Cuckoo's egg and two eggs Little Field-Wren, Blacktown, N.S.W.
14/10/12.—One Black-eared Cuckoo's egg and two eggs Little Field-Wren, Blacktown, N.S.W.
3/11/12.—One Black-eared Cuckoo's egg and two eggs Little Field-Wren, Blacktown, N.S.W.
17/11/12.—Found fledgling in nest of Little Field-Wren, Blacktown, N.S.W.
6/12/12.—Saw young one being fed by Little Field-Wren, Blacktown N.S.W.



Eggs of *Mesocalius palliolatus* (top row).

Eggs of *Chthonicola sagittata* (bottom row).*

FROM A PHOTO. BY P. A. GILBERT.

On 24/12/12 an adult Black-eared Cuckoo was seen flying from the direction of a nest under observation. Closer examination revealed that an egg of the Little Field-Wren had been ejected, and was lying 4 inches from the entrance. Two eggs of the foster-parent and one of the Cuckoo were found in the nest, thus showing, as in common with other Cuckoos, that where a full set already exists one is thrown out and replaced by a Cuckoo's egg. The data here collated demonstrates that the Black-eared Cuckoo evinces a decided preference for the nest of the Little Field-Wren (*C. sagittata*) in Eastern Australia. In Western Australia the nest of the Redthroat (*Pyrrolaemus brunnea*) is frequently chosen.

* For natural colour see pl. xiii, fig. 17.

The shape of the Black-eared Cuckoo's egg approximates to that of the Bronze-Cuckoo (*C. plagosus*), being slightly larger in size. In colour it ranges from salmon-chocolate to a deep chocolate, and, when found in the nest of *C. sagittata*, whose eggs it very closely resembles, is readily distinguished by its superficial coating of pigment—which comes off when lightly rubbed with the finger—its elongated shape, and the white composition of its shell, whereas the pigment is incorporated in the shell of *C. sagittata*. The adult appears to do most of its feeding on the ground, as we have frequently flushed it while walking slowly. Its flight resembles that of the two Bronze-Cuckoos (*C. basalis* and *C. plagosus*).

Some Swamp Birds.

By A. C. STONE, R.A.O.U., MELBOURNE.

(Read before the Bird Observers' Club, 16th April, 1913.)

I HAVE had opportunities of observing many Australian swamp birds in their natural habitat. The Murray River flats, which I know well, have, up to the last few years, been subject to flooding at longer or shorter periods from time immemorial. Now, huge levee banks serve to keep the river within its bounds, but in an abnormally wet season it is liable to break out at low-lying places that are badly guarded.

It is over twenty years since I first made the acquaintance of the Murray flats and swamps, when but very little had been done in the way of "banking." Many times have I sailed, poled, or rowed a flat-bottomed boat across Lake Boga (which is nearly 3 miles wide), over the flats for a mile or two, direct across the Little Murray ("Barne"),* hardly being able to distinguish the river course (there are no bushes or trees lining its banks near Lake Boga); then away over Pental Island ("Nyetyetpert Buka-rook"), across the Big Murray ("Millee"), and into the swamps of New South Wales. With shotgun and rifle ready to hand, there was never any difficulty in those good (or bad) old times in keeping the larder more than well supplied. Lake Boga ("Gourrm") is in a large lake system, and most of the lakes are filled with fresh water from the backwaters and creeks at high water mark. The shores of most of the lakes are plentifully sprinkled with the kitchen middens, or ovens ("lukull"), of the now almost extinct aborigines, which tell their tale of a former large population, and vast supplies of fish and game ready to fall victims to the skill of the native hunter.

On such a trip as I have outlined above there was much to please an observer. At one time we would be passing within a short distance of large fleets of Black Swans (*Chenopsis atrata*), "Coonnoar," intent on pulling up the ribbon-weeds ("Narelle"), which in some seasons grow thickly in Lake Boga, and feeding

* Lake Boga tribal names in inverted commas.

on the soft roots and crustacea to be obtained thereby. Then one's attention would be drawn to a string of Pied Geese (*Anseranas melanoleuca*), "Gnack," passing almost overhead from one reed-bed to another, "honk-honking" as they went. Thousands were to be seen with little trouble, and they nested in the snake-infested reed-beds at some seasons. They were unsuspicious birds, and could be easily shot. Settlement has driven them far away, and it is years since I saw one in the district. Rounding a bend in the swamp, we would come into view of a sand-spit on which would be perhaps over a hundred Pelicans (*Pelecanus conspicillatus*), "Nynungourk," sunning themselves after a successful fishing expedition. I have often seen hundreds of these birds together on a moonlight night, swimming after a shoal of fish. Their general habit at such times is to bunch together, shoulder to shoulder, and they make a great commotion, eating the fish and swimming at great speed. The Pelican's power of vision is very great, and in passing from one sheet of water to another at any distance it reaches a great altitude, and soars on outspread wings in spirals before departing, and, again, previous to alighting. My observations go to prove that these birds, in their natural state, feed principally upon small fish, although not disdaining a larger one if in the way. A wounded bird will sometimes disgorge a hatful of small fish. The Pelican swims very high in the water.

On a sloping river-bank were to be seen large flocks of Wood-Duck or Maned Geese (*Chlamydochen jubata*), "Nannuck," and, stalking through the shallow water, Australian Egrets (*Herodias syrmatorphorus*), "Cathupbee Mununderra," White-necked Herons (*Notophoxyx pacifica*), "Waan," White-fronted Herons (*Notophoxyx novaehollandiae*), "Carthinbung," Yellow-billed Spoonbills (*Platibis flavipes*), "Toop-toop," and, perhaps, an odd Black-billed Spoonbill (*Platalea regia*), "Naangourelle." The last-named species nested in an adjoining lake some years ago. Sometimes a Falcon or other bird of prey would go flashing over a flock of Teal (*Nettion gibberifrons*), "Binnar," its progress being marked by a long succession of dives and splashes as the Ducks, in turn, attempted to evade the enemy. In the distance, on higher ground, were Australian Bustards (*Choriotis australis*), "Gnarrow," in numbers; I have counted up to 32 in the field of vision. The Australian Crane (*Antigone australasiana*), "Gootthun," was, several years ago, in the estimation of some farmers, among the pests of the wheat-lands, and was poisoned wholesale with strychnined wheat. I have never heard of these birds nesting freely near Lake Boga. I remember following a wounded Crane for over half a mile—across a ploughed paddock, through the native tobacco scrub, and over sand-hills. Suddenly the trail which I was following disappeared, and was replaced, at right angles, by the tracks of a fox, who secured a dinner at my expense.

Musk-Duck (*Biziura lobata*), "Goolwill," were especially common; on many occasions I saw a wide, irregular band of these

birds stretching for over a mile on the lake, with a Pelican or a Swan, Cormorants of different species, Australian Coots (*Fulica australis*), "Tdaich," and Ducks—especially Hardhead or White-eyed Duck (*Nyroca australis*), "Garrut"—here and there. Flying thickly overhead were hundreds of Marsh Terns (*Hydrochelidon fluviatilis*), "Garwit," and Silver Gulls (*Larus novæ-hollandiæ*), "Barpethen." If anything happened to alarm them, such as the report of a rifle or the approach of a boat, the birds whose usual mode of progression was by flight would depart, while the Musk-Duck would, with head and shoulders stretched forward, rush through the water with a side to side movement. The noise thus made resembles the roar of a train—in fact, living about 300 yards from the railway station, I was often deceived by it. At certain times of the year the Musk-Duck is able to fly, and I have more than once known one to be shot in full flight, at dusk, in mistake for Black Duck (*Anas superciliosa*), "Nyree." The Musk-Duck makes a rather bulky nest of water-weeds, and generally lays four eggs. The Black or Straw-necked Ibis (*Carphibis spinicollis*), "Gnargourelle," White Ibis (*Ibis molucca*), "Cukcuk," and Glossy Ibis (*Plegadis falcinellus*) were all to be seen without much difficulty, and the nests of the two former species, in favourable seasons, would cover acres of half-dry swamp land. The Ibis was always well spoken of by the farmer, and especially the irrigationist, for the good done by the bird in eradicating insect pests. I remember an instance in which an invasion of caterpillars or grubs threatened the destruction of crops; but in a day or two the plague was entirely cleaned out by a succeeding invasion of Ibises. Australian Coots were generally much in evidence, and, if sufficient rain had fallen in spring or autumn, were to be seen in thousands, feeding on the succulent herbage which so quickly springs up in the sandy soil on the lake banks.

On the check-banks of the flooded area of Fish Point I discovered, one season, a large rookery of the White-headed Stilt (*Himantopus leucocephalus*), "Kercumbul." There were many hundreds of nests. The approach of a stranger was the signal for a great disturbance among the Stilts, or "Bulldogs," as the fishermen called them, in consequence of their call resembling the "yap" of a puppy. They also, when disturbed, hopped continually out of the water. On the outskirts of one of these rookeries I found nesting the Spur-winged Plover (*Lobivanellus lobatus*), "Barretch Barretch," Red-kneed Dottrel (*Erythrogonyx cinctus*), and Red-necked Avocet (*Recurvirostra rubricollis*). Within two miles (205 miles from the coast-line), in depressions on a higher bank, were scores of the nests of the Silver Gull (*Larus novæ-hollandiæ*), "Barpethen," each containing eggs—from one to three. I regret to say that, within a few days, all the eggs were destroyed, the delinquent being some prowling bird or beast.

The Bald-Coot (*Porphyrio melanonotus*), "Beenbing," is a common Lake Boga bird. The nest is composed of reeds, bitten into short lengths, and placed in a thick mass of reeds. The

number of eggs in a clutch varies, the largest I have known being nine. I have a clutch of seven; three or four of these eggs bear fine, hair-like lines. This bird is very destructive to the eggs of the Black Swan. Directly the Swan leaves its nest, the Bald-Coot, if in the vicinity, attacks the eggs with bill and claws. The "boom" of the Australian Bittern (*Botaurus poiciloptilus*), "Coweer," can often be heard at night in the township, if the wind is favourable. It is ridiculous to maintain that the aborigines believed the Bittern's "boom" to be the cry of the mythical bunyip. The native knew Nature too well to be misled in such a manner. The nest of the Bittern is composed of half-dried water-weeds and rushes, and carried to a height of about 18 inches above water level. In February, 1907, I had the great pleasure of visiting a colony of nesting Grebes (*Podiceps australis*), "Gorrwong," on Long Lake. The nests, which were composed of water-weeds placed upon floating masses of the same plants, were only a few feet apart, and contained from one egg (of a bluish-white colour) to four or five (badly stained) eggs. On the approach of danger, if sufficient time offers, all the Grebes cover their eggs with wet water-weeds, which speedily results in the eggs being stained a deep chocolate. I found the Hoary-headed Grebe (*Podiceps poliocephalus*), "Gorrower," nesting freely in The Heart morass at Sale, in 1910. There were also hundreds of nests of the Marsh Tern (*Hydrochelidon fluvialis*), "Garwit," containing, in most instances, the maximum number (three) of eggs. I saw scores of nests containing young birds, with perhaps an addled egg in the nest or water close by; but in no case were there three young chicks. The parents fed the nestlings on small fish. The Marsh Tern nested freely on Lake Boga in 1911; but storms, causing huge waves, destroyed all the nests and eggs. The Australian Shoveller, or Bluewing (*Spatula rhynchotis*), "Weetchut," I consider to be the most suspicious of the Duck family, and it takes but the slightest out of the common to disturb them. They are always the first of the Ducks to take alarm.

The Hardhead, or White-eyed Duck (*Nyroca australis*), "Garrut," and the Blue-billed Duck (*Erismatura australis*), were often caught in the fishermen's nets when diving for insects and so forth. The Freckled Duck (*Stictonetta nævosa*), "Gnall Gnall," is occasionally met with; but I have never known it to nest in the Lake Boga district. The Pink-eared Duck or Widgeon (*Malacorhynchus membranaceus*), "Gewallert," is, at times, very common, and comes suddenly, as do most water-birds, in huge flocks. I have not heard of the species nesting in the Lake Boga district. In 1908, on the shores of Lake Toutchewop, ("Goutchewop"), a large, straggling lake, there must have been hundreds of thousands of birds. The Cormorants take toll of the shoals of fish. I once saw a Black Cormorant (*Phalacrocorax carbo*), "Murtmurrel," choked when attempting to swallow a cat-fish ("Buck"). The side spines of the fish were caught in

the bird's throat. The Snake-Bird, or Darter (*Plotus novæ-hollandiæ*), "Gercarthin," when alarmed, sinks its body below the surface of the water, and gets quietly away, with only the top of its head and the long, sharp-pointed bill showing. It was never abundant about Boga. The Little Crake (*Porzana palustris*), "Tillip," and the Pectoral Rail (*Hypotaenidia philippensis*), "Lerrup," are both shy birds. Their nests are found occasionally, the maximum number of eggs in a clutch being six and ten respectively. The Sharp-tailed Stint (*Pisobia acuminata*) is often a common bird, and in favourable seasons every sand-spit round some of the lakes is covered with them.

In 1904 I found the Red-backed Parrot (*Psephotus hæmatonotus*), "Gechurt," nesting freely in the hollow gum-trees in the Yassam swamp, the maximum number of eggs in a clutch being four. Many of the hollow branches not occupied by the Parrot were tenanted by the Tree-Martin (*Petrochelidon nigricans*). In 1892 the banks on either side of the creek which fills Lake Boga from the Murray were lined with willow-trees, which had been planted by the Moravian missionaries, the original cuttings coming from a willow growing over Napoleon's grave at St. Helena. These trees, with their green curtain of branchlets sweeping the face of the creek, made a charming picture. These lower branches were chosen by hundreds of Reed-Warblers (*Acrocephalus australis*), "Garcoon Garcoon," for nesting. The reeds at the edge of the creek were also filled with nests. In some seasons the Black-tailed Native-Hens (*Tribonyx ventralis*), "Dallip," come in thousands, and, after nesting, depart as speedily as they come. I once found a nest of the Grass-Bird (*Megalurus gramineus*) in a polygonum bush which was surrounded by water. Two or three feathers of the Black-tailed Native-Hen were built into the nests, shafts down, the feathery portion completely doming the nest. The Harrier, or Swamp-Hawk (*Circus gouldi*), "Birr," is a common bird. It places its nest in long grass, in growing crop, or in rushes in the middle of a swamp.

Bird-Life on White Island (N.Z.)

BY W. R. B. OLIVER, R.A.O.U., AUCKLAND.

THERE is scarcely a spot more delightful for the naturalist than a remote island, where sea-birds resort each year for the purpose of rearing their young, and where the balance of nature has not been disturbed by the intrusion of man. Such places are becoming fewer every year; but, thanks to their inaccessibility, rough and rocky surface, and often inhospitable climate, many islands still exist in their primeval condition in the southern seas. Included in the New Zealand biological region are some of the most interesting of the nurseries for sea-birds.

Though not a rendezvous for many of the ocean Petrels, White Island is, nevertheless, of interest to the ornithologist as the

breeding-place for sea-birds under conditions—namely, in the presence of poisonous fumes—scarcely paralleled elsewhere. I considered myself fortunate, therefore, when, through the courtesy of Mr. J. G. Magee, manager of the White Island Sulphur Co., I was permitted to visit White Island during December, 1912. Leaving Opotiki in the company's launch at 3 a.m. on the 6th, a course nearly due north was steered for the island, which, though 35 miles out in the Bay of Plenty, was clearly visible, and easily attracted attention by the white steam cloud resting over it. Viewed from the sea at close quarters, it was a magnificent sight. The sun, rising from near the south-east, made the island stand out like a jewel against the clear blue sky and deeper blue of the calm waters. The island itself is of a light pink colour, clothed at its base and western end with dark green vegetation. Where the crater wall is broken away (as it is at the eastern end, where we landed), the sulphur-coloured cliffs of the interior are visible, and over all rests a huge cloud of steam, from which the island receives its name. We landed at 7.40 a.m. in Crater Bay, near where the overflow from the crater lake discharges. The sea water here is discoloured, and no life is found for some distance on either side.

White Island is only $1\frac{1}{2}$ miles in length, but it rises to a height of 1,075 feet above sea-level. It is a volcanic cone, with a central crater, which has steep outer and precipitous inner faces, but is broken away almost to sea-level at the eastern end, where a landing may be effected in fine weather. Within the crater is a large lake of greenish-yellow water, boiling in several places, and containing, among other chemicals, over 5 per cent. of free hydrochloric acid. The outer slopes of the crater are very steep, difficult and dangerous to walk over, as the stones give way at every step, and deeply furrowed by innumerable channels, often impassable on account of their precipitous sides of loose, detachable material. An immense quantity of steam is discharged from the crater at all times. Issuing from three large and innumerable small blow-holes near the level of the lake, it usually ascends to the top of the island, where it is caught by the wind and carried away. Apparently all steam issuing from the White Island crater is charged with poisonous fumes, that from the lake being particularly noxious. It has a choking effect, and even in mild doses, such as one can scarcely avoid when exploring the crater, causes constant coughing, and colours the saliva pink. It is the presence in the atmosphere of poisonous fumes which inhibits (except at places remote from the crater) the growth of vegetation on the island. It also occasionally disturbs the sea-birds, but, apparently, does not interfere with the rearing of their young.

I spent three days on White Island, during the whole of which time the weather was fine. Fearing a change, however, I decided to return to Opotiki in a launch owned by a Maori, who came over for the day to collect young Mutton-Birds for eating. Trusting to a compass which was evidently affected by a lamp

and the engine, we first sighted the New Zealand coast 11 miles to the east of Opotiki. At 1 a.m. the Opotiki bar was reached, but, it being low tide, could not be crossed until 3.30 a.m.—eight hours after leaving the island.

Five species of birds are known to breed on White Island. One of these I was unable to identify, only mutilated specimens being seen. It was a small Storm-Petrel, which probably suffers from the depredations of rats (*Mus exulans*), of which species I saw one dead specimen.

Sula australis (Australian Gannet).

There are about six colonies of Gannets on the south coast of White Island, and one on a rock a little distance from the shore. The areas occupied are clear of vegetation—indeed, the presence of dead pohutukawa plants (*Metrosideros tomentosa*) in the midst of some of the colonies shows that the birds not only prevent the scrub from spreading, but actually kill any on ground which they may occupy.

It is not practicable to visit the Gannet colonies by land, as it means climbing a dangerous track on the inner cliff-face of the crater, and then descending the steep slope to the sea. I did not attempt this route, but made use of the Sulphur Company's boat, which is kept for the purpose of getting firewood. The first colony visited (7th December) contained mostly fresh eggs, though in many incubation had begun, and some young birds were noticed. Most of the chicks had just hatched, though a very few were large and covered with white down. The nests were placed at almost equal distances apart, each consisting of a low mound of earth with a hollow at the top, in most cases lined with *Chenopodium* stalks. I do not believe that the birds do more towards making the nest than perhaps scratching a little hollow and placing some pieces of *Chenopodium* or seaweed therein, the weather and the protective action of guano accomplishing the rest. The mound, therefore, is simply caused by rain water washing away the ground round the nest.

Only one egg is laid. At first it is of a light greenish colour, and covered with a thick layer of lime. Soon, however, it becomes dirty, and the time during which it has been brooded can be judged roughly by its colour. When first hatched the young Gannet is naked and entirely black. As it grows it becomes covered with pure white down, and is then really a pretty object. Now, before rising the adult Gannet almost invariably disgorges the contents of its stomach, and the young instinctively performs the same act, though it is incapable of flight. Even naked birds just hatched endeavour, when approached, to throw up their food. Here seems to be a case of instinct at fault, for, though it may be necessary for the adult to relieve itself of its load of fish in order to rise quickly, it is incredible that it is of any benefit to the young to lose a meal.

I examined the contents of the stomachs of several birds, and

found them to consist mostly of small garfish. In some, however, there were other kinds of fishes and squids. Though Gannets are usually silent, when their breeding colony is approached they frequently rise in a body, uttering cries all the time. The whole colony rises in a similar way when the wind carries the poisonous fumes from the crater among the sitting birds. The fact that the prevailing winds in the Bay of Plenty are from the west and south-west, thus carrying the fumes in a north-easterly direction, no doubt explains why the bulk of the vegetation and all the Gannet colonies on White Island are on the west and south coasts.

Another and larger colony of Gannets which I visited (8th December) contained mostly young birds just hatched, though there were fresh eggs and large chicks covered with white down. The breeding season, therefore, extends over many months, but most of the eggs are laid about the beginning of November. Seaweed was noticed as lining to a large number of nests in this colony. Unlike the birds visited on the previous day, these Gannets did not take much notice of me, and I was enabled to take photographs at close quarters. Indeed, if not careful, one might receive painful wounds from their large, pointed bills.

Larus scopulinus (Red-billed Gull).

The common Mackerel Gull of New Zealand breeds on the east point and north coast of White Island. On the east point their nests are placed among rocks and slopes covered with tussock-grass (*Poa anceps*). The nest is small, being composed merely of a few stalks of *Mesembryanthemum*, and perhaps lined with grass. Several nests, each containing two eggs, apparently freshly laid, were seen. On the north coast a small colony breeds on a rocky point. Here were seen nests with eggs, young birds just hatched, and others almost fully fledged. The newly-hatched birds were covered with down of a creamy-white colour, with black spots. At my approach most of the young endeavoured to hide in rock crevices, and one took to the water, swimming out some distance.

Estrelata macroptera (Great-winged Petrel).

This is the "Mutton-Bird" of the Auckland district, the term being loosely applied to any of the Petrels or Shearwaters which are used for food. White Island, being 35 miles from the mainland, is seldom visited for its birds: but while I was there a number was collected by some Maoris, who had come over from Opotiki for the day. The burrows are found in all the patches of vegetation round the coast of the island. As is usual in such colonies, the ground is practically undermined, and one's foot may sink suddenly at any step. The single egg is probably laid in August. At the time of my visit each burrow contained a nearly fully-fledged young bird, which fought vigorously on being brought to the surface.



Nest of Red-billed Gull (*Larus scopulinus*).

FROM A PHOTO. BY W. R. B. OLIVER.

Sterna frontalis (White-fronted Tern).

There is a small breeding colony of this species at the eastern point of White Island. I was not able to examine the nests, which were high up on a cliff facing the sea.

Visit to Torilla Plains.

BY E. D. BARNARD, R.A.O.U., KOONIGAL (Q.)

AN invitation from the manager of Torilla Plains Station to spend a few days with him observing waterfowl during the breeding season was hailed with delight. I left home 4th March. A ride for a day and a half brought me to Wowan, the present terminus of the newly-opened Dawson Valley railway. Wowan is said to be one of the native names of the Brush-Turkey (*Catheturus lathamii*). A train ride of about two hours brought me to Mount Morgan, the celebrated mining town, which is scattered over a large area of rough and rocky ridges at the source of the Dee River. Here we changed trains, and, after descending the famous Razorback

Hill, soon reached Rockhampton. The Razorback is so steep that a powerful rack engine is used to assist the ordinary engine both in ascent and descent.

The next portion of the journey was by coach, and at 6.45 a.m. the "Royal Mail" left the P.O. with a large and miscellaneous load, on which the several passengers perched. The first day's stage was safely accomplished, but that night it rained heavily, and, as the country was already streaming with water, fears were entertained as to to-morrow's progress. These expectations were realized when, at about 10 a.m., we reached Tilpal Station and found Tilpal Creek, a large tidal creek, flowing in a swift, broad stream, some feet over the bridge. The delay was most irksome, especially as I could find nothing of oological or ornithological interest in the vicinity; but fortunately there was no more rain, and after a delay of a day and a half the creek had fallen sufficiently to allow the coach to cross with safety.

Torilla was reached by lunch time, and I received a warm welcome from Mr. Rogers, who at once began planning excursions for the remainder of the week. Torilla Plains takes its name from the large plain (most probably at some remote period an arm of the sea) which extends for about 18 miles, by an average width of 4 or 5 miles, through the middle of the property, an island (aboriginal name, *torilla*) a few acres in size rising in the middle of the plain. After a good, wet season the plain is covered with water, varying in depth from 3 or 4 feet to as many inches, but the greater depth obtains at the northern end, where one or two mangrove creeks drain into the sea. Rushes grow thickly in the deeper water and in some of the arms or indentations, which extend in some cases for perhaps half a mile, and over the greater part of the plain the water couch-grass flourishes, making wading extremely difficult. After the water dries off the plain is a valuable grazing pasture; stock thrive and fatten on the marine herbs and grasses, which possess great fattening properties. Naturally, birds were present in great numbers, although I was assured that three and four years ago there were fully treble the present number.

Tuesday, the 11th of March, was a red letter day for me. After a short ride through one of the stock paddocks, we turned our attention to the plain. The horses were well used to the work, and splashed steadily along, often almost swimming, but never ceasing to reach out for a mouthful of the profusely-growing couch-grass. In a shallow part we came upon a good number of White-headed Stilts (*Himantopus leucocephalus*), and a short search soon revealed two or three nests, one containing three eggs. Pushing through the reeds, out of which in all directions Pied Geese (*Anseranas melanoleuca*) were rising from their nests, we came upon an Ibis colony. There were dozens of these nests (of two species), built of reeds firmly and neatly plastered together, and anchored securely to the ground. Often several were joined together, forming a platform of irregular shape. I

took hold of one platform, and was surprised at its strength. I could hardly shake it, and when I stood upon it it neither sagged nor shook with my weight. The contents of the nests varied greatly. In one platform of, say, six nests, there were eggs just chipping, sets of fresh eggs, and nests not yet laid in, while a few feet away I saw young birds almost able to fly. If heavy rains occur while the birds are nesting hundreds of nests are swamped by the rising waters, and the eggs or chicks destroyed; while, on the other hand, if the wet season ends suddenly, and the waters dry up, the slower-maturing birds, such as Swans, Geese, &c., die in hundreds because of their inability to travel to more favourable localities. The nests of the Pied Geese and Swans mostly contained incubated eggs, one Goose's nest having the unusually large complement of sixteen. Ducks' nests were fairly plentiful at this spot, but the majority nested in the long grass on the drier portions of the plain. We saw several nests of the Whistling-Duck (*Dendrocygna arcuata*), White-eyed Duck (*Nyroca australis*), Black Duck (*Anas superciliosa*), and secured a nest of the Plumed Whistling-Duck (*Dendrocygna eytoni*) with thirteen eggs. The nest of a Shoveller (*Spatula rhynchotis*) was also secured. These Ducks select as a nesting site a patch of dry ground with very short grass, and generally some distance from water. "Burdekin Ducks" (*Tadorna rufigerum*) were also seen in occasional pairs, but, although I saw them perching in the fringe of gums surrounding the plain, I was unable to secure a nest. A peculiar fact which I noted was that I never saw a Wood-Duck, a Black-throated Grebe, or a Bald-Coot during my visit. Why had such a body of water, luxuriant with masses of vegetation, no attraction for these species?

A large sand-ridge on one side of the plain was tenanted by White-necked Herons (*Notophoxys pacifica*), but all had young birds of almost the same age, the cracked shells lying on the ground beneath the nests. I ascended a tree which had a Whistling-Eagle's (*Haliastur sphenurus*) nest besides five of the Herons', and obtained a very pretty pair of eggs. A very dull-coloured clutch of three of this species was taken from a species of mangrove tree, the nest not being 10 feet above the water. The next day I visited two colonies of Royal Spoonbills (*Platalea regia*), situated in a tea-tree swamp. The colonies were only about 300 yards apart, but, singularly enough, in one the nests almost all had young, and in the other I did not see a young bird. I should estimate the larger colony to contain about 200 nests.

Three species of Egrets were plentiful, and we made a gallant attempt to visit their abode; but after plunging and struggling through dense mangroves for a considerable time we came upon the banks of a large, swiftly-running tidal creek, in the middle of which, upon an island covered with mangroves, the Egrets were apparently nesting in hundreds. There was no boat to be got, and my desire to swim across was checked by the certain

presence of alligators. Nankeen Herons (*Nycticorax caledonicus*) were in thousands, but did not appear to be nesting. Doubtless they, too, found a safe retreat among the mangroves when they desired to breed.

Several nests of the Little Pied Cormorant (*Phalacrocorax melanoleucus*) were seen. Two of these contained seven eggs each, and another six. Previously I had never seen more than four in a nest. A Jabiru's (*Xenorhynchus asiaticus*) nest was inspected in a low ironbark, but it was not being used. Very few of these stately birds were seen. A hurried visit to Stanage Bay, a picturesque home on the coast, where I saw a White-headed Sea-Eagle's (*Haliastur leucosternus*) or Osprey's (*Pandion leucocephalus*) nest on a rocky pinnacle, securely isolated at high tide, brought my trip to a conclusion, and I returned to work, with both my diary and my mind stored with memories of happy days among the birds of Torilla Plains.

The Birds of Peel Island.

BY NOEL V. I. AGNEW, R.A.O.U., MORETON BAY, QUEENSLAND.

PEEL Island, or Turkrooa, is situated near the head of Moreton Bay. It is somewhat flat, and about 2 miles long by 1 mile broad. Few birds breed on the island. Most of them migrate at the end of winter, returning again in the autumn. The following 76 species have been identified, namely:—

Stubble-Quail. (*Coturnix pectoralis*).—Not very numerous. Their cry is often heard, but the birds are seldom seen, owing to the abundance of grass. Nests on the island.

Barred-shouldered Dove (*Geopelia humeralis*).—Rare. Only one specimen of this species has been seen.

Ground-Dove (*Geopelia tranquilla*).—Common. Many young ones seen. According to reports, the Ground-Dove breeds in the more secluded parts of the bush.

Little Green-Pigeon (*Chalcophaps chrysochlora*).—Seldom seen. This species comes and goes.

Bronze-winged Pigeon (*Phaps chalcoptera*).—Rare; some seen.

Bald-Coot (*Porphyrio melanonotus*).—Common. Breeds here. Nests of "Redbills" (local name) are generally found in swamps, built of aquatic plants, leaves, &c. Five eggs, of a greenish-stone colour with brown markings, are laid at a sitting. Bald-Coots are often seen in the fowl-yards after eggs or any bones with scraps of meat on. Their note is rather squeaky—in fact, it is more of a cry. When flying their legs hang loosely behind.

White-faced Storm-Petrel (*Pelagodroma marina*).—Rare. Solitary specimens have been seen flying over the island in bad weather.

Sooty Tern (*Onychoprion fuliginosa*).—Rare. Doubtful species.

Silver Gull (*Larus novæ-hollandiæ*).—Common at times.

Pacific Gull (*Gabianus pacificus*).—Rare.

Curlew (*Numenius cyanopus*).—Common. Seen on sand-banks at low tide.

Common Sandpiper (*Actitis hypoleucos*).—Seldom seen. Occasionally one or two come to feed when on migration.

Southern Stone-Curlew (*Edicnemus grallarius*).—Heard at night.

White Ibis (*Ibis molucca*).—Common during winter, but departs in beginning of spring, evidently to breed elsewhere.

Straw-necked Ibis (*Carphibis spinicollis*).—Not so common as *Ibis molucca*. Winters here.

Glossy Ibis (*Plegadis falcinellus*).—Rare. Seen singly or in pairs during winter.

White-fronted Heron (*Notophox novæ-hollandiæ*).—Common. Seen on mud-flats. Nests here.

Australian Egret (*Herodias syrmatophorus*).—Rare. This bird occasionally visits us in twos and threes.

Reef-Heron (*Demigretta sacra*).—Common. Is seen feeding on the reefs and sand-banks at low tide with other sea-birds. Nests have been observed.

Black Duck (*Anas superciliosa*).—Common at times. Shooting parties have frightened most of these birds away. Nests have been found.

Black Cormorant (*Phalacrocorax carbo*).—Common.

White-breasted Cormorant (*Phalacrocorax gouldi*).—Common at times.

Pied Cormorant (*Phalacrocorax hypoleucos*).—Common at times

Australian Darter (*Plotus novæ-hollandiæ*).—Rare.

Australian Gannet (*Sula australis*).—Common at times.

Australian Pelican (*Pelecanus conspicillatus*).—Several pairs have been seen. Not so numerous as formerly.

Spotted Swamp-Hawk (*Circus assimilis*).—One specimen was shot by a resident and brought to me for identification.

White-bellied Sea-Eagle (*Haliæetus leucogaster*).—One pair breeds here.

Little Falcon (*Falco lunulatus*).—One specimen noted.

White-headed Osprey, "Fish-Hawk" (*Pandion leucocephalus*).—Common. Breeds every year in the mangroves.

Boobook Owl (*Ninox boobook*).—Common. Their "more pork"-like cry is heard nearly every night. When out in mangroves I surprised a pair. Nests here.

Blue-bellied Lorikeet (*Trichoglossus swainsoni*).—Common. Breeds in the hollow spouts of gum-trees on the island. Very noisy bird. Feeds on honey from blossoming gums (blood-woods) or any other flowering tree.

Black Cockatoo (*Calyptorhynchus funereus*).—Rare. Inhabitants of the island inform me that several specimens have been observed.

White Cockatoo (*Cacatua galerita*).—Several pairs seen, which apparently inhabit the island. Nests in hollows of dead trees.

Australian Roller (*Eurystomus pacificus*).—One specimen noted.

Blue Kingfisher (*Alcyon azurea*).—Rare. Have seen several pairs. A nest observed.

Great Brown Kingfisher, “**Laughing Jackass**” (*Dacelo gigas*).—Common. Nests here. One in captivity is fed with meat, grubs, and lizards.

Forest Kingfisher (*Halcyon macleayi*).—Single specimen seen.

Sacred Kingfisher (*Halcyon sanctus*).—Common. Nests and young have been observed.

Bronze-Cuckoo (*Chalcococcyx plagosus*).—Rare. One specimen was seen behind the house, on fig-trees, eating insects.

Pheasant-Coucal (*Centropus phasianus*).—Several of these birds have been observed.

Welcome Swallow (*Hirundo neoxena*).—Common in winter. Nests in spring months.

Tree-Martin (*Petrochelidon nigricans*).—Common in winter. In early spring months these birds are seen building in the hollow spouts of gum and other trees.

Red-capped Robin (*Petroica goodenovii*).—A solitary specimen seen.

Rose-breasted Robin (*Erythrodryas rosea*).—Several of these dainty birds have been seen.

White-throated Fly-eater (*Gerygone albogularis*).—Rare. Song is very cheerful. Have seen only one specimen.

Singing Fly-eater (*Gerygone cantator*).—Common. This bird is called the “Queensland Canary” by Brisbaneites because of its cheerful song. This Fly-eater nests on the island, building on a low branch of a mangrove. Nest made of tea-tree bark, moss, &c., and suspended from a twig. Eggs, three in number, are warm white in colour, with reddish-brown blotches on larger end.

Rufous-breasted Whistler (*Pachycephala rufiventris*).—Common in winter. Very active bird, and generally resorting to the higher branches of gum and other trees.

White-shafted Fantail (*Rhipidura albiscapa*).—Common in winter months, but rare in spring and summer.

Rufous-fronted Fantail (*Rhipidura rufifrons*).—Rare. Now and again a specimen is seen.

Black-and-White Fantail (*Rhipidura motacilloides*).—Common in winter. Very friendly birds. One specimen noted in December (1912).

Restless Flycatcher (*Seisura inquieta*).—Common at times. Note similar to that of a razor being ground, and uttered when hopping on the ground or hovering about.

Leadon Flycatcher (*Myiagra plumbea*).—Common all year. Young have been seen, though their nests have not been found.

Black-faced Cuckoo-Shrike (*Graucalus melanops*).—Commonly known as “Blue Jay.” Generally inhabits the topmost branches of high trees.

Little Cuckoo-Shrike (*Graucalus mentalis*).—A flock of a dozen came and stopped with us for two months.

Pied Caterpillar-eater (*Campephaga leucomela*).—Rare. In the

winter months these birds are mostly seen, and when nesting-time comes they disappear till about the end of each autumn.

Ground-Thrush (*Oreocincla heinii*).—Rare. A pair visits us every winter. Beautiful song.

Grass-Warbler (*Cisticola exilis*).—This bird inhabits mainly the grassy and swampy parts of the island, and breeds here. Its nest is placed low in a small shrub, among long grass. The nest of this bird which I found was 6 inches from the ground, sewn to two broad leaves of a native shrub, and woven to the leaves with cobweb. The lining was of thistledown, and very cosy for the young. The three eggs were blue in colour, with reddish spots. Unfortunately, several days after the female began sitting a fire demolished nest and eggs. The song is very pleasing, and is better when the bird is on the wing.

White-rumped Wood-Swallow (*Artamus leucogaster*).—Common. This bird is generally seen in flocks of a dozen or so, clinging to the branches of trees. This species nests here, in the fork of a tree or in the hollow branch of a mangrove. Egg of *Artamus leucogaster* has a neutral ground colour, and is dashed, speckled, and blotched with different shades of brown.

Masked Wood-Swallow (*Artamus personatus*).—Several of these birds visited us last winter.

Wood-Swallow (*Artamus sordidus*).—One specimen has been seen flying about paddock.

Pied Grallina, or Magpie-Lark (*Grallina picata*).—Common. Nests here. Very tame.

White-throated Tree-creeper (*Climacteris leucophæa*).—One only observed.

White-eye (*Zosterops dorsalis*).—Common in winter. When not breeding, flocks of White-eyes may be seen feeding in the mangroves.

Mistletoe-Bird (*Dicæum hirundinaceum*).—Common. This bird generally inhabits the topmost branches of trees, and is very hard to distinguish at times, especially on a windy day. It has a clear song.

Spotted Pardalote, or Diamond-Bird (*Pardalotus punctatus*).—Common. Nests on island. Very timid bird.

White-naped Honey-eater (*Melithreptus lunulatus*).—Several specimens have been seen.

Sanguineous Honey-eater (*Myzomela sanguinolenta*).—Common. This bird is generally known as the "Blood-Bird," because of its blood-coloured head.

Yellow-faced Honey-eater (*Ptilotis chrysops*).—Common. Breeds here. Nest made of tea-tree bark, cobwebs, lined with leaves and moss. Nests found were all suspended from branches of tea-tree. Eggs buff in colour.

White-bearded Honey-eater (*Meliornis novæ-hollandiæ*).—Common. Very active bird, and is always near dwellings. A pair was resting in my room one day for half an hour. Nest made of tea-tree bark, leaves, moss, cobwebs, &c. Eggs, two in number, are buff in colour and slightly darker on larger end.

Friar-Bird, or Leatherhead (*Tropidorhynchus corniculatus*).—Common. Breeds here. Most of their nests are found in tea-tree

(*Leptospermum*). Nests made of tea-tree bark, dead gum leaves, fine twigs, and horsehair, or any string that may be found.

Pipit, or Ground-Lark (*Anthus australis*).—Several pairs seen. The nest which I found was in a tuft of grass, made of dried grass and fibrous roots. Three eggs are laid, of a greyish-white colour, blotched and freckled with light brown and purplish-grey.

Shining Starling (*Aplonis metallica*).—Several specimens have been observed.

Satin Bower-Bird (*Ptilonorhynchus holosericeus*).—This is the only Bower-Bird which frequents the island. A pair comes now and again and stops for a few months.

Australian Crow (*Corvus coronoides*).—Common. The stick nests made by these birds are found in the high branches of gum-trees.

Australian Raven (*Corvus australis*).—Common at times.

American View of the R.A.O.U. "Check-list."

THE "Check-list of North American Birds" is the production of many years of painstaking work by many masters in ornithology. Whether Australians approve or disapprove of this masterpiece little concerns our American cousins. Conversely, the appearance of the Australian "Check-list," as seen through American spectacles, is not necessarily of vital importance to Australian students. Possibly each side may be right from its own point of view.

The Auk (vol. xxx., No. 3, July, 1913) has been good enough to devote two pages (445-6) to a review, which is entitled to respect by Australian ornithologists, on the "Check-list" recently issued by the R.A.O.U.

Adverse criticism on the Australian "List" was partly expected from this quarter, owing to the binomial nomenclature, the limitation of the law of priority, &c., being diametrically opposed to the American system; consequently the learned reviewer expresses the opinion that the principles governing the list "constitute the most remarkable code of nomenclature that has been framed in recent times." We agree that the list is a "remarkable" production. It is unique: it retains binomialism and rejects trinomialism; it fixes the law of priority at Gould, thus approaching the "statute of limitations," which the Americans rejected; and, although rules and explanations have been cited, it is an "authoritative" list based on Gould. There is not another list of the kind extant, and is not likely to be, for the same conditions do not obtain in any other country. Further, the reviewer has not had the same experience and knowledge as Australians of the practical application of trinomial methods—in fact, he evades that important issue, the practical application of trinomials, which, according to Mathews, increases the number of Australian species and sub-species from 800 to 1,500 at a jump—otherwise he might more readily comprehend the vigorous objections of Australians.

The reviewer is fearful that with the adoption of the R.A.O.U. "Check-list" the "progress of ornithology in Australia has been to some extent hindered," and gratuitously commends instead Mr. G. M. Mathews' "Reference-list" as an "admirable check-list of Australian birds on advanced lines." The fear is rather that Mr. Mathews' "advanced lines" will lead students into ornithological chaos, which the adoption of the R.A.O.U. "Check-list" happily avoids. Take two examples among many:—

1. The White-bellied Robin of south-western Australia. In his "Hand-list" (*Emu*, vol. vii., p. 86, 1908) Mr. Mathews classes it as *Eopsaltria*; in his "Reference-list" (*Nov. Zool.*, xviii., p. 317, January, 1912) as *Pachycephala*; and not twelve months after, in this American-recommended "Reference-list," he consigns the species to a new genus, *Quoyornis* (*Austral Avian Record*, vol. i., p. 111, December, 1912).
2. The Yellow-plumed Honey-eater (*Ptilotis ornata*). Gould regarded the bird collected by him in the "belts of the Murray" as identical with the species Gilbert obtained in Western Australia, yet Mr. Mathews subdivides the species into five, and in some instances from localities not 100 miles apart. There are *Ptilotis ornata ornata* (W.A.), *P. o. wesleydalei* (W.A., inland), *P. o. muna* (Stirlings), *P. o. tailemi* (Tailem Bend, S.A.), and *P. o. underbooli* (Mallee, Vic.)—*Vide* "Reference-list," p. 410, and *Austral Avian Record*, vol. ii., p. 10. If we had adopted Mr. Mathews' conclusions, what guarantee would we have had that they were final?

There is a complaint that the "Check-list" Committee "fails to comprehend the true nature of a sub-species," and the instance is cited of the Tasmanian Swamp-Quail (*Synoicus*, not *Synornis*). No doubt, generally, on the question of sub-species and geographical races and varieties, there seems to be much confusion (even amongst Australians) caused by treating sub-species, variety, and race as identical. The great Darwin, in his "Origin of Species," states:—"Certainly no clear line of demarcation has yet been drawn between species and sub-species—that is, the forms which in the opinion of some naturalists come very near to, but not quite arriving at the rank of species; or, again, between sub-species and well-marked varieties, or between lesser varieties and individual differences. These differences blend into each other in an insensible series."

It is stated in the R.A.O.U. list that every geographical race is not a sub-species, though many are, and where they are sufficiently distinctive they have been raised to that rank. Mr. Mathews apparently draws no distinction between sub-species and variety. Adverting again to *Synoicus diemenensis*, the "cabinet" ornithologist terms it "a very questionable geographical race."

Mr. A. J. North, C.M.Z.S., &c., professional ornithologist of the Australian Museum, in part 2, vol. iv., p. 181, of his "Nests and Eggs," recently issued, states (regarding *S. diemenensis*) that—

"In six adult specimens now before me the distinguishing characters of this species pointed out by Gould are constant. The

Tasmanian Swamp-Quail is altogether a larger and more handsome species than *Synæcus australis*. Both species are found in Tasmania, sometimes frequenting the same locality, but *S. diemenensis* is not found in Australia.

"Typically the eggs of this species can be distinguished from those of *Synæcus australis*, which in Tasmania may be found breeding in the same district, by their larger size, the prevailing yellowish-olive hue of their ground colour, and their more distinct markings."

Colonel W. V. Legge, C.M.B.O.U., &c., author of "The Birds of Ceylon," and for many years a resident in Tasmania, can confirm Mr. North's statement. It is therefore evident that *S. diemenensis* is more than a "race." This demonstrates the mischief that can be done by a "cabinet" man abroad intermeddling with the home work of Australians, where local field knowledge is so indispensable.

"The Birds of Australia."

As Mr. G. M. Mathews has apparently some invincible objection to sending his work (save two odd parts of vol. ii.) to *The Emu* for review—a journal probably more interested in Australian ornithology than any other—the following notice from *The Field*, 31st May, 1913, may be taken as a fair and unbiased criticism on the progress of Mr. Mathews' important work:—

"Since our last notice of this finely illustrated work (*Field*, 1st February), three more parts have appeared. Part 5 of vol. ii. includes a continuation of the Gulls and Skuas, and contains also the title page of the volume and index. The first part of vol. iii. includes the Plovers, amongst which are some very remarkable forms which are peculiar to Australia. Amongst them is the Red-kneed Dottrel (*Erythrogonys cinctus*, Gould). The account given of it by Mr. Mathews is very meagre compared with that published by Gould forty-eight years ago in his 'Handbook to the Birds of Australia.' Mr. Mathews describes it from Parry's Creek, North-West Australia, and gives its distribution as 'West Australia, Northern Territory,' mentioning no other localities in which it has been found, not even those recorded by Gould. It has a much wider range than he supposes. We happen to know this little bird very well, and have received specimens from Queensland, North-East Australia, and seen others which were sent from the Gomm Station on the Murray River, South Australia. The name which he gives it in his text, *Erythrogonys cinctus mixtus*—which does not correspond with the lettering of his plate, a fault frequently noticed in this work—suggests that he considers the north-western example which he describes to differ in some way from the type. But as he does not indicate in what respect it differs, and the plate gives a good representation of the bird described by Gould, we fail to see why any change of name is necessary. Similarly, the so-called Eastern Turnstone is separated from the well-known species which is commonly to be met with on our own coasts, and its geographical distribution—stated to be 'Eastern Siberia to Alaska, wandering to Australia in the non-breeding season'—is very much wider than this. The Turnstone, in fact, is well-nigh cosmopolitan, as may be seen by looking at the list of localities given by Sharpe in his 'Catalogue' of the *Limicola* in the British Museum (pp. 99-103), the only other species of Turnstone recognized by him and other authorities being the Black-headed Turnstone (*S.*

melanocephalus), found in Western North America from Alaska to Monterey in California. We are aware that certain American ornithologists separate the common Turnstone of the Old World from that found in North and South America, giving them different sub-specific names; but the difference relied upon appears to be nothing more than individual variation, and anyone who is familiar with the appearance of the Turnstone at all seasons of the year will be aware that the plumage of the old and young both in summer and winter shows considerable variation. Mr. Mathews would have done well to point out that the larger of the two figures on his plate is an immature bird. The same remark applies to his plate of *Charadrius geoffroyi*. The well-known Grey Plover, Australian specimens of which were properly recognized by Gould, Sharpe, Ramsay, and others, as *Squatarola helvetica*, is renamed by Mr. Mathews, although, like so many others of the wading birds (*Limicola*), it is found nearly all over the world, and the variations of plumage to which it is subject may be safely attributed to the age of the bird, and the time of the year at which it may happen to be obtained. As in the breeding season it has the whole of the under parts jet black, and in the winter pure white, naturally the intermediate stages show great variation.

"Some very beautiful Sand-Plovers are figured in part 2 of vol. iii., including the Red-capped Dottrel, the Hooded Dottrel, and the Black-fronted Dottrel. Amongst the larger Sandpipers two very striking species are the Banded Stilt—with pure white head and neck, a chestnut pectoral band, back and wings black, and flanks white—and the Red-necked Avocet, which has the whole of the head and neck chestnut, the wings black with a white bar, the back, tail, and under parts pure white. The last-named is widely distributed in Australia, being found in Queensland, New South Wales, Victoria, South Australia, and Tasmania. Why it should receive a new name in Western Australia, as proposed by Mr. Mathews, will puzzle those of his readers who happen to be acquainted with the species.

"The smaller Sandpipers may be conveniently grouped in two genera, *Totanus* and *Tringa*—the former characterized by having a hard bill, semipalmated toes, and a barred tail; the latter a soft, sensitive bill, toes cleft to the base, and the tail not barred. Familiar examples of *Totanus* are the Greenshank, Redshank, and Green and Wood Sandpipers; amongst those of the genus *Tringa* are the Knot, Purple Sandpiper, Dunling, Little Stint, Temminck's Stint, Curlew Sandpiper, and many others. These are ready marks of distinction, yet we note that Mr. Mathews, contrary to the general practice, places the Green Sandpiper (with a barred tail) in the genus *Tringa*, thus upsetting one's preconceived notions respecting the classification of these birds.

"It seems very ungracious to find fault with an author who has bestowed so much labour in the preparation of a very beautiful work (so far as the plates are concerned), but he so often deliberately runs counter to the accepted opinions of naturalists more experienced than himself, and creates so much confusion by changing names that have been in use for many generations, that it is not possible to give unqualified praise to the result of his undertaking."

Stray Feathers.

Charcoal in Finches' Nests.—Mr. H. G. Barnard, who is collecting for me on the west of the Gulf of Carpentaria, has lately forwarded several clutches of eggs of *Poephila personata*, and he mentions the curious fact, which I have not previously seen recorded, that in every case the birds place pieces of charcoal in the nest along with the eggs. The charcoal is in small lumps,

about the size of the eggs, which become quite dark-coloured from contact with it. Other Finches—notably *P. becki* and *P. gouldiae*—breeding in the same locality do not adopt the curious habit.—H. L. WHITE. Belltrees (N.S.W.), 7/9/13.

* * *

Regent Bower-Bird (*Sericulus chrysocephalus*), Lewin. — In *The Emu*, page 44, vol. x. (1910-11), I remarked that probably the female alone built the nest. I have since confirmed that deduction by actual observation. At Ourimbah (12/11/11) I watched a female Regent-Bird commencing her nest, and observed that she returned with material every three minutes. I spent some considerable time watching her movements, and am convinced that she alone constructs the nest. On 26/11/11 the nest contained one fresh egg; the female glided off as I approached. — P. A. GILBERT. Redfern (N.S.W.), 16/2/13.

* * *

White Cockatoos.—These birds (*Cacatua galerita*) have always been plentiful in the Upper Hunter district of New South Wales (*vide* North's "Nests and Eggs," vol. iii., page 79), but the numbers noted during the late winter have exceeded all former records. I never previously noticed the birds in such numbers. Luckily, the invasion occurred after the maize crops had been harvested. To the south-west, and about a mile from the Belltrees homestead, a very sharp-pointed, conical hill rises abruptly from the surrounding country to a height of about 1,000 feet; it is clothed on the eastern (or sheep-camping) side with a dense coat of thistles and weeds, which appear to attract the Cockatoos. During several mornings lately the pointed top of the hill has been covered by thousands of Cockatoos, crowded so closely together that from a distance the mass presents the exact appearance of snow—in fact, several people who witnessed the sight for the first time declared that the hill was capped by snow.—H. L. WHITE. Belltrees (N.S.W.), 7/9/13.

* * *

Brush-Turkeys in England.—Mr. D. Le Souëf, Director of the Melbourne Zoological Gardens, has received a letter from the Duchess of Bedford, in which she states:—"The Brush-Turkeys (*Cathartus lathami*) have done extremely well with us. The first were imported in 1897, and, as far as I can make out, we have imported about 26 in all. It is very difficult to estimate their numbers now, as they are out in the woods; but, when Pheasant shooting in winter, I have counted 40 in the trees at one moment, and we must have well over a hundred. I think that they must have been breeding before your visit to Woburn, as we have had young for many years. They seem to hatch out at the end of July and August. We opened a mound last year, in the first week in August, and there was a young bird in it, which appeared to have been hatched for some time, and was almost capable of

flight. There were also several fertile eggs. The birds do not stray at all, and, though they are in a wood which is on the extreme outside of the park, I have never seen a single bird outside, nor have I seen them in any other part of the park, though, as you know, they have their complete liberty. We can only catch them by feeding them into traps. We do not feed the chickens until they come to the ordinary winter feeding for Brush-Turkeys and Pheasants together."

From Magazines, &c.

Montebello Islands.—*The Geographical Journal* (July, 1913) contains a general and interesting article on these islands by P. D. Montague. The islands are off the coast of North-West Australia, and about 40 miles from the nearest mainland. Mr. Montague had in his party the late Mr. L. Burns, whose obituary notice appears in this issue. Mr. Montague remarks that ten small land-birds are found in the group, the majority of which agree with types from the north-west mainland, but two are sub-species not elsewhere recorded—one a very pale form of *Anthus*, named *A. montebelli*,* the other a dark sub-species of *Eremiornis*, called *E. assimilis*.* Of the birds of prey, the Osprey (*Pandion*) was the most abundant. Two pairs of Sea-Eagles (*Haliæetus leucogaster*) were also found nesting, and a few pairs of the White-headed Sea-Eagle (*Haliastur leucosternus*). The latter species fed largely on rock-crabs. The mangroves were much frequented by Brown Honey-eaters (*Stigmatops*) and a species of Ground-Dove (*Geopelia*), which roosted in the thick trees during night and from the heat of the day. The nesting season varies according to the rains, said to be usually January or February; but after a shower in July a small percentage of these birds began breeding.

Correspondence.

THE R.A.O.U. "CHECK-LIST."

To the Editors of "*The Emu*."

SIRS,—I am sorry that Mr. A. W. Milligan should have drawn personalities into his defence of the "Check-list." This should not have been done, because I feel quite sure that all the members of the "Check-list" Committee, except Mr. Milligan, know me well enough not to credit me with any wish to be personal. I contend that, in spite of Mr. Milligan's argument, the Tasmanian session did not represent the ornithologists of Australia. The majority at every session is composed of trippers, or, if you like, call them "bird-lovers." How could anyone, who thought for a moment, adopt the list when they had not the slightest knowledge of what it contained?

* Montague, *Austral Avian Record*, vol. i., p. 181.

The steamer which conveyed Mr. Milligan to Tasmania arrived very late, and that gentleman had time only to go very hurriedly through the list, put it to the meeting, and dash off to catch the boat again for Melbourne. No one had a chance to grasp the outline even of the "Check-list." Mr. Milligan says that there was only one dissentient, by which he means myself. I must say that I feel very proud to have moved that more time be given for consideration, and that the list be referred back to the committee. I was pleased that Dr. G. Horne, of Melbourne, supported me in this, because I spoke on behalf of progressive ornithology.

In reference to *Zosterops halmaturina*, I will mix King Island birds with specimens from the mainland, and will defy any ornithologist, even Mr. Milligan, to pick them out. The *Petroica campbelli* can be manufactured out of any *P. leggii* when skinning the bird simply by stretching the skin under the white frontal spot. This all goes to show that there was not nearly enough material at the disposal of the "Check-list" Committee to enable it to form a fair idea of the work. Mr. Milligan told us at the session all about the American "Check-list" falling to pieces through trinomials, or, in his words, "trinomials were pulling it to pieces with their own weight," and that Mr. Ogilvie Grant, of England, would not use trinomials. How strange that the American ornithologists are stronger than ever on trinomials, and the latest works of Mr. Ogilvie Grant plainly show that he is using trinomials!

In conclusion, I say that Mr. Milligan is entirely wrong in stating that I attacked the "Check-list" Committee. If he thinks that I have attacked him, he has no right to speak for the other members. I feel that I have a perfect right to criticise the "Check-list." I say again that the R.A.O.U. "Check-list" will not be considered scientific by the ornithological world.—I am, &c.,

Quorn (S.A.), 30/7/13.

S. A. WHITE.

IS THE MAGPIE A SONGSTER?

To the Editors of "The Emu."

SIRS,—Dr. Bancroft wants to know "whether many members" of our Union agree with Dr. J. A. Leach in (*inter alia*) his remarks upon the Magpie. Dr. Leach says, "That glorious songster the Magpie"; Dr. Bancroft says, "The Magpie is not a songster at all." Well, I, for one, am wholly in agreement with Dr. Leach. There is a very old saying, "*De gustibus non disputandum*," and if Dr. Bancroft considers that the lovely morning carol of the Magpie is "a harsh, guttural sound," all I can say is that I am sorry for him. In my garden there are several large pines and elms, in which a colony of Magpies roosts, and the music of these birds in the morning is a never-failing source of delight to me. Possibly the Magpies in Queensland do not carol; I have had no experience of them. Possibly, again, Dr. Bancroft has no ear

for music. I know a barbarian who shot his Magpies on account of "the noise they made in the morning." He would perhaps have delighted in Dr. Bancroft. The voice of the Magpie is music to me, and to hundreds of others, and we decline, in spite of Dr. Bancroft's opinion, to consider it a "harsh, guttural sound."—I am, &c.,

FRANK S. SMITH.

Noorat, Victoria.

About Members.

CAPTAIN S. A. White and Mrs. White, of Adelaide, have started on a trip to Central Australia, and will be absent, probably, for several months. In a letter to a Melbourne member of the R.A.O.U., written before setting out, Captain White stated:—"We will make for Macumba, with the object of visiting some fine bores, where birds may have collected. Next, we will proceed to Dalhousie Springs. From the Springs we will move on to the Finke River, and follow its course into the Macdonnell Ranges, travel along the southern side of the ranges, making trips into the heart of the mountains where gorges will permit of a passage. After reaching Alice Springs we propose to push on further east, exploring the range for all kinds of animal life as we travel. We will work out the extreme eastern end of the Macdonnell Ranges, which is new country, return to the Hall River, run it down into the unknown, and find our way back to Oodnadatta through country which looks fairly blank on the map. This means, of course, 2,000 miles of travel over rough country."

Obituary Notice.

News was received in May of the accidental death by drowning of Mr. Lachlan M'Kinnon Burns, at the Forrest River, near Wyndham, Western Australia. Mr. Burns, although only 24 years of age, had done valuable scientific work in different parts of the western State. A native of Gippsland, he went to Western Australia when a lad. Soon after leaving school Mr. Burns was engaged on survey camps for some time. Two years ago, when Mr. C. Price Conigrave organized his exploring expedition to traverse the extreme northern part of Western Australia, Mr. Burns joined as second in command. Through the efforts of Messrs. Conigrave and Burns a valuable collection of the fauna and flora of that part of the continent was made. Shortly after the return of the expedition, Mr. Burns accompanied a party to the Montebello Islands, off the Western Australian coast, where interesting zoological finds were made for the Royal Society of London.

In the early part of May, 1913, Mr. Burns volunteered to join an Anglican party that was establishing an aboriginal mission station at the Forrest River. Mr. Burns had obtained an intimate

knowledge of the country, as the expedition under Mr. Conigrave's command went into depot for several weeks at the spot where Mr. Burns eventually met his death. When attempting to recover wounded Ducks from a small lily-covered lagoon, Mr. Burns became exhausted, and, despite every endeavour on the part of Bishop Trower, was drowned. The body was subsequently taken in an open boat by the bishop to Wyndham, a distance of 70 miles, and was interred in the local cemetery, Mr. Burns had been a member of the Union for the past three years, and the sincere sympathy of its members is extended to his relatives.

Description of New Parrot.

BY (DR.) W. MACGILLIVRAY, R.A.O.U., BROKEN HILL, N.S.W.

THE discovery of a new and distinct addition to our Parrakeets is due to the enthusiasm and energy of another member of our Union, Mr. McLennan. When collecting at Cape York, 1910-1912, he heard several times of a Parrot inhabiting the country in the vicinity of the Pascoe River, and which, from various descriptions given, he thought to be an *Eclectus*, or some allied form. He prevailed upon me to allow him to proceed to the Pascoe River, which enters the sea on the East Coast of Cape York Peninsula, about 20 miles, as the Crow flies, to the north of Lloyd's Bay. When proceeding up the river in search of a suitable camping-place, one of the first objects which attracted his attention was a strange Parrakeet, which flew from the scrub lining the banks of the river. Its call and flight were unfamiliar to him.

I have now received from him a male and female of what seems to me not only a new species, but a new genus. It may be placed in the family *Cyclopsittacidae*.

Although partaking in general of the characters of this family, and of the two genera, *Neopsittacus* and *Cyclopsittacus*, of which it is composed, it differs sufficiently, in my opinion, from both to warrant it being placed in a distinct genus, for which I propose the name *Pseudopsittacus*, the distinctive characters being:—Bill—upper mandible crimson, merging into orange-yellow at the tip; lower mandible dark brown, gonys moderately broad and flattened, with one distinct central ridge; nostrils bare. In the female the bill is wholly olive-brown. Tail short; rectrices twelve, and of equal length.

***Pseudopsittacus maclennani*, gen. and sp. nov.**

Male.—Forehead, lores, cheeks, and ear coverts rose-red; the posterior feathers of the ear coverts tipped with blue; crown, occiput, and nape cobalt blue. The rest of the upper surface grass green, with the exception of a small chestnut-red patch on the tertiary coverts of each wing, and the rectrices, which are yellowish-green with brown shafts, and a brighter green edging to the webs. The chest, abdomen, and flanks a lighter shade of green

than the back. Under tail coverts yellowish-green, margined with brighter green, under surface of rectrices yellowish-green. Under wing coverts bright blue, outer webs of primaries bright green, the first being only margined with green, the shafts and inner webs brown.

Mr. M'Lennan's field notes on the soft parts are :—

"Testes slightly enlarged. Irides, outer circle silvery cream, inner circle greenish; skin round the eye pale olive, eyelid darker; upper mandible crimson, merging into orange-yellow at the tip; lower mandible dark brown; skin round nostrils olive-green; throat flesh colour; tongue—upper surface whitish, under surface blackish; legs and feet olive-green, soles of feet paler, claws brown. Crop contents—three kinds of seeds; gizzard contents—small grains of blackish gum and half-digested seeds.

"Length in flesh, $9\frac{1}{8}$ inches; wing, $7\frac{1}{16}$ inches; wing outspread, $17\frac{1}{2}$ inches. 14th July, 1913."

Female.—The whole of the head, neck, face, cheeks, and ear coverts purplish-brown, the rest of the plumage similar to the male.

Field note (Mr. M'Lennan's) on soft parts :—

"Ovary normal. Irides silvery cream, inner circle greenish, skin round the eye pale olive, eyelids darker; bill olive-brown, nostrils olive-green; throat flesh colour; tongue—upper surface whitish, under surface blackish; legs and feet olive-green, soles of feet paler, claws brown. Crop contents—small grains of blackish gum and half-digested yellow seeds and bean.

"Length, 9 inches; wing, $7\frac{3}{4}$ inches; wing outspread, 18 inches. 20th July, 1913."

Next Annual Session R.A.O.U.

IMPORTANT NOTICE.

OWING to the vaccination restrictions in Western Australia, the visit to that State has been postponed, and instead the annual session will take place in Adelaide during November. Members will be informed as to precise date and programme by the usual circular.

The most important feature of the session will be the "working excursion" on a River Murray steamer. Members will embark at Murray Bridge and be landed at such stages along the river as are best for bird-observing. There will be excursions into unexplored Mallee, wading tramps through lagoons, inspection *en route* of the famous Cockatoo cliffs, &c.

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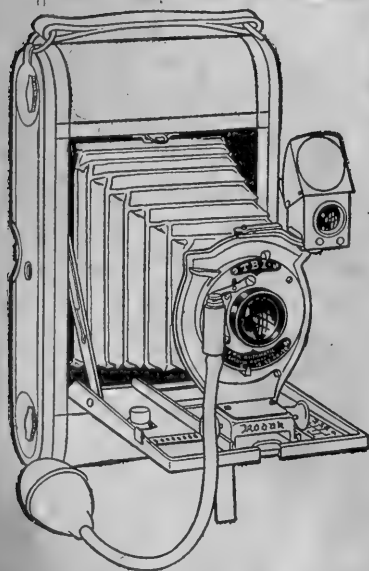
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Vol. XIII.]

JANUARY, 1914.

[Part 3.]

The Emu

A Quarterly Magazine to popularize the Study and Protection
of Native Birds.

Official Organ of the ROYAL AUSTRALASIAN ORNITHOLOGISTS' UNION.



Editors { A. J. CAMPBELL, Col. Mem. B.O.U.
CHARLES BARRETT.

Melbourne:

WALKER, MAY & CO., PRINTERS, 25, MACKILLOP STREET.

EUROPEAN AGENTS:

WITHERBY & CO., 326 HIGH HOLBORN, LONDON.

1914.

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CONTENTS - JANUARY, 1914.

(The author of each article is responsible for the facts recorded therein, and any deductions he may draw.)

	PAGE
ROYAL AUSTRALASIAN ORNITHOLOGISTS' UNION - - - -	107
FIELDS FOR WORK: <i>Presidential Address</i> - - - -	114
THE RIVER EXCURSION. <i>By Alex. Chisholm, R.A.O.U.</i> - -	118
BIRDS IDENTIFIED, LOWER MURRAY EXCURSION, DECEMBER, 1913. <i>By (Capt.) S. A. White, M.B.O.U., &c.</i> - -	122
OVERLAND EXCURSION. <i>By (Dr.) J. Burton Cleland, R.A.O.U.</i> -	129
NOTES ON SOME NORTH QUEENSLAND BIRDS. <i>By (Dr.) W. Macgillivray, R.A.O.U., Broken Hill (N.S.W.)</i> - -	132
DESCRIPTIONS OF TWO NEW EGGS. <i>By H. L. White, R.A.O.U., Belltrees (N.S.W.)</i> - - - -	186
NEW SUB-SPECIES OF HONEY-EATER. <i>By H. L. White, R.A.O.U., Belltrees (N.S.W.)</i> - - - -	187
NEW PARROT FOR AUSTRALIA, AND DESCRIPTION OF EGGS. <i>By (Dr.) W. Macgillivray, R.A.O.U., Broken Hill, N.S.W.</i> -	187
SEARCH FOR AMYTORNIS WOODWARDI IN THE NORTHERN TERRITORY. <i>By Harry G. Barnard, R.A.O.U.</i> - - -	188
THE R.A.O.U. "CHECK-LIST": <i>Some Appreciations</i> - - -	190
CORRESPONDENCE - - - - -	193
STRAYS.—Double Clutch of Butcher-Bird's Eggs, 194; Freak Colours of <i>Rhipidura tricolor</i> , 195.	
NOTES AND NOTICES - - - - -	195

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The Emu

Official Organ of the Royal Australasian Ornithologists' Union.

"Birds of a feather."

VOL. XIII.]

1ST JANUARY, 1914:

[PART 3.

Royal Australasian Ornithologists' Union.

THIRTEENTH (ADELAIDE) SESSION.

MINUTES OF THE THIRTEENTH ANNUAL SESSION OF THE ROYAL AUSTRALASIAN ORNITHOLOGISTS' UNION, HELD AT ADELAIDE FROM 23RD NOVEMBER TO 25TH NOVEMBER, 1913.

AT the 1912 session of the Union it was decided that the 1913 congress should be held in Western Australia. Various circumstances prevented this from being carried out, and the *locale* was changed to Adelaide, with a working excursion up the Murray River to follow.

FIRST DAY.

The inter-State visitors arrived in Adelaide by the Melbourne express train on 23rd November, and were met by Capt. S. A. White and Messrs. F. R. Zietz (president) and R. Crompton (secretary) of the South Australian Ornithological Association. In the afternoon the visitors, together with a number of Adelaide residents prominent in scientific circles, were entertained by Capt. and Mrs. White at their residence, "Wetunga," Fulham. Keen interest was manifested by all in the fine general collection made by the host and hostess on their recent trip to Central Australia—an interest that was deepened by a short, informal lecture given by Capt. White. The appreciation of the visitors was expressed in a vote of thanks moved by Mr. A. H. E. Mattingley, C.M.Z.S.

SECOND DAY.

At 11 o'clock on the following morning the programme was resumed by a visit to the South Australian Museum. Urgent University business necessitated the absence of Professor Stirling, the honorary Director, and the party was taken in charge by Mr. F. R. Zietz, the Ornithologist to the Museum. Though the Museum could not be seen to best advantage, owing to improvements being in progress, it was evident that in a few years' time it would be an exceptionally fine institution. Pleasure was expressed at the ample accommodation being provided for exhibits of Australian birds.

A motor-drive to the Mount Lofty Ranges occupied the afternoon, Capt. White again being the host. The weather was fine.

After lunch at the Aldgate Hotel, Mr. J. W. Mellor's property, "Glenburne," at Stirling East, was visited. The evening was devoted to a lecture by Capt. White, who, taking as his title "The Dead Heart of Australia," related to a large audience, in the Royal Society's Hall, Adelaide, the experiences of himself and Mrs. White on their recent camel trip. The lecture was illustrated by lantern slides. Capt. White remarked that he was sure that one or two sub-species, if not distinct species, of birds would be found in the material collected. Several interesting and important records in the matter of distribution had been made, and these would help to rectify mistakes made in regard to interior forms previously collected. The address was well received, and a hearty vote of thanks accorded the lecturer, on the motion of Mr. Mattingley and Mr. A. M. Lea (Entomologist at the South Australian Museum).

THIRD DAY.

The Adelaide Botanical Gardens were visited on the morning of the 25th, and subsequently Dr. R. H. Pulleine entertained about fifteen guests at luncheon, for which he was cordially thanked.

Mr. A. G. Edquist, organizer of nature study in South Australian schools, took some of the visitors to city schools. Both at the Sturt-street and Currie-street schools Messrs. A. H. E. Mattingley and A. H. Chisholm addressed the children. Mr. Mattingley dealt principally with the economic aspect of nature study, and Mr. Chisholm with the æsthetic side. Each addressed a large class of trainee teachers. They also visited Mr. M. M. Maughan, Director of Education, who expressed general appreciation of the work of the Union.

GENERAL MEETING.

On the evening of 25th November the annual meeting of members was held at the Royal Society's Hall. There were present:—Capt. S. A. White (who was voted to the chair, in the unavoidable absence of Mr. R. Hall, the president), Messrs. R. Crompton (who carried out the secretarial work), E. A. Ashby, A. G. Edquist, J. W. Mellor, F. R. Zietz, J. D. Somerville, and A. Crompton (South Australia); and Messrs. A. H. E. Mattingley, A. H. Chisholm, and H. B. Slaney (Victoria).

Capt. White regretted that the attendance was not larger, and intimated that a number of apologies had been received.

Mr. Mattingley read a letter from their Majesties the King and Queen, Patrons of the Union, conveying a felicitous message, and returning thanks for the last volume of *The Emu*.

Mr. Mattingley remarked that it was very pleasing to note this continued interest in the Union of its royal patrons.

Mr. Crompton read the minutes of the previous session, which were confirmed.

The address of the President was received, and taken as read.

The following donations to the Coloured Figure Fund were

acknowledged:—E. D. Barnard (Qld.), 3s. 9d.; Miss M. Brumby (Tas.), 5s.; E. M. Cornwall (Qld.), 2s. 6d.; Chas. H. von der Pfordten (W.A.), 2s. 6d.; G. Graham (Vic.), 5s.; Chas. Gubanyi (N.S.W.), 7s. 6d.; Col. W. V. Legge (Tas.), 5s.; Dr. W. J. Long (Vic.), 7s.; R. E. P. Osborne (S.A.), 12s. 6d.; Miss H. Lilius Sanderson (S.A.), 2s. 6d.; A. W. Swindells (Tas.), 5s.; Thos. Tindale (Vic.), 5s.; W. Young, (Vic.), 2s. Total, £3 5s. 3d.

Donations for Illustrations:—H. L. White, £12 2s.; Capt. S. A. White, 19s. 6d. Total, £13 1s. 6d.

Mr. J. W. Mellor asked how the value of *The Emu* was arrived at, as stated in the assets.

Mr. Mattingley said that the determination was largely adventitious, based on 1s. a copy.

Mr. Ashby considered figures hardly safe that would not bring assets out at the price stated.

Mr. Mattingley said that the Union's finances would be carefully safeguarded, and for some time it would not be possible to issue large numbers of the journal. Mr. H. L. White, of Belltrees, Scone, had been very generous in the matter of illustrations.

Mr. Ashby spoke in eulogistic terms of *The Emu* and its editors.

The report and balance-sheet were adopted, on the motion of Messrs. Mattingley and Edquist.

The annual election of officers resulted as follows:—President, Mr. A. H. E. Mattingley, C.M.Z.S.; vice-presidents, Capt. S. A. White and Dr. W. Macgillivray; hon. secretary, Mr. A. C. Stone; hon. treasurer, Mr. Z. Gray; hon. librarian, Mr. W. H. D. Le Souëf, C.M.Z.S.; hon. press correspondent, Mr. L. G. Chandler; hon. editors of *The Emu*, Messrs. A. J. Campbell, Col. M.B.O.U., and Charles Barrett; elective members of the Check-list Committee, Capt. S. A. White and Mr. F. M. Littler.

Members of Council:—Victoria, Dr. Charles Ryan, Dr. J. A. Leach, and Dr. George Horne; New South Wales, Dr. J. Burton Cleland and Mr. A. F. Basset Hull; South Australia, Dr. A. M. Morgan; Western Australia, Mr. B. Woodward; Queensland, Mr. C. A. Barnard; Tasmania, Colonel W. V. Legge. State secretaries:—Victoria, Mr. A. C. Stone; South Australia, Mr. J. W. Mellor; New South Wales, Mr. A. S. Le Souëf; Tasmania, Mr. F. M. Littler; Western Australia, Mr. E. A. Le Souëf; Queensland, Dr. Hamlyn Harris; Northern Territory, Mr. G. F. Hill; New Zealand, Mr. W. R. B. Oliver.

As honorary members, Messrs. H. L. White (N.S.W.) and A. W. Milligan (Vic.) were nominated.

Mr. Edquist considered that Capt. S. A. White's fine services to Australian ornithology merited recognition, and nominated him as hon. member. Mr. Ashby seconded the nomination, which was supported by Messrs. Zietz and Mellor. On a ballot being taken, Capt. S. A. White and Mr. H. L. White were elected.

Mr. Edquist thought that the list of hon. members should be extended, but Mr. Ashby considered that the honour should be made as conservative as possible, so that it would be the more valued.

NOMENCLATURE.

Capt. White moved that a recommendation be conveyed to the editors of *The Emu*, through the Council, that the trinomial system of nomenclature in connection with Australian ornithology be adopted for all sub-species. He had properly described a sub-species in a paper which he had written, and this name was altered to a binomial. As a result of this, he was adversely criticised in many quarters outside Australia. *The Auk* had said that he did not know how to describe a bird, and he could not run the risk of this again by publishing in *The Emu*.

Mr. Mellor seconded the motion. He said that there must be some means of identifying sub-species.

Mr. Ashby supported the motion. He considered it a scientific necessity that Australia should come into line with the rest of the world, and use trinomials for valid sub-species.

The motion was carried unanimously.

Mr. Zietz criticised the "Check-list."

A suggestion by Mr. Edquist that was favourably regarded was that a small sub-list should be published, giving the full nomenclature of the few sub-species that were recognized as sound.

BIRD PROTECTION.

Mr. Ashby intimated that everything possible was being done with regard to the Kangaroo Island reserve. It was hoped that the desired Act would be passed next session, and would make provision for the reservation of 300 square miles. It was also hoped that the reserve would be vested in trustees, outside political influence. He was greatly desirous of seeing Lyre-Birds introduced to the island, where he considered they would do well. These birds were formerly plentiful in the Blackall Ranges, N.S.W., where a few still remained in country very similar to the interior of Kangaroo Island.

Arising from correspondence from Mr. James Buckland, Mr. Chisholm moved—"That this annual congress of the R.A.O.U. urges upon the Commonwealth Government the great necessity that exists for such a measure as the British Plumage Prohibition Bill, and suggests that the High Commissioner be requested to petition the British Prime Minister to have this Bill made law without delay." The motion was carried unanimously.

THANKS.

On the motion of Mr. Somerville, seconded by Mr. Zietz, a vote of thanks was accorded the retiring office-bearers. Mr. Mattingley, in responding, paid a tribute to the work of Mr. Zietz.

A hearty vote of thanks was also accorded the Royal Society for the use of its rooms for meeting purposes.

On behalf of visiting members, Mr. Mattingley thanked the South Australians, and particularly Capt. White, for the kindly reception given all.

It was agreed that the next session should be held in Victoria.

NEW MEMBERS.

The following were unanimously elected members of the Union:—

Victoria.—Mr. G. P. Kay, C. of E. Grammar School, Geelong; Mr. Ernest E. Barker, Horsham; Mr. Frank Holloway, Heatherton; Mr. L. C. Buchner, University, Melbourne; Mr. J. E. Chubb, National Museum; Rev. W. E. Dexter, St. Barnabas', South Melbourne; Mr. Henry Holmes, Burnewang, Elmore; Mr. D. Moffatt, Grammar School, Geelong; Mr. Herbert A. Purnell, Geelong; Mr. H. B. Slaney, Hawthorn-road, Caulfield; Mr. A. C. Willis, 403 Collins-street, Melbourne; Mr. Athol M'G. Kirkwood, Kew; Mr. F. Thonemann, 101 Queen-street, Melbourne.

New South Wales.—Mr. Ralph C. Blacket, Nerriga; Mr. E. Bland, Tetholme; Mr. W. J. Enright, West Maitland; Mrs. E. H. Ferrier, Neutral Bay; Mrs. S. Kearney, Ashfield; Mr. Ernest E. Kersey, Rose Bay; Mr. J. K. M'Crae, Hillston; Mr. S. E. Rohu, Sydney; Mr. W. M. Steinbeck, Jerilderie; Mr. G. H. Wiburd, Corowa.

Queensland.—Mr. Allan P. Dodd, Nelson; Mr. L. B. Mouritz, Dalby; Mr. Otto Sandel, Brisbane; Mr. V. E. White, Duaringa.

South Australia.—Mr. W. P. Cormack, Tumby Bay; Mr. J. D. Somerville, Yeelanna; Mr. Samuel Sanders, Sturt; Mr. H. W. Andrew, Black Forest.

Northern Territory.—Mr. C. E. W. Hogge, Darwin.

Tasmania.—Mr. Chas. Challis, Launceston; Miss Ivy Fletcher, Springfield.

New Zealand.—Messrs. Duncan and Simpson, Dunedin.

England.—Mr. Robin Kemp, Long Sutton, Somerset.

America.—Mr. W. J. Erichsen, Savannah, Ca.

ANNUAL REPORT.

LADIES AND GENTLEMEN,—The Council has much pleasure in presenting to you the Thirteenth Annual Report of the Royal Australasian Ornithologists' Union.

Since last annual meeting 29 new members have been enrolled and 20 names have been struck from the rolls for various reasons. The Council deeply regrets the deaths of four members of the Union—Dr. Sclater, of the British Museum, who was one of the first elected hon. members; Dr. Hinder, of New South Wales; Mr. Lachlan M'K. Burns, of Western Australia, who died under tragic circumstances; and Mr. A. Hamilton, our local secretary in New Zealand. The Union also lost an old friend when Mr. John F. Mellor, of South Australia, passed away.

Ten Council meetings were held in the past financial year, and the average attendance of members was satisfactory. The best thanks of the Council are again due to Colonel Charles Ryan for placing his rooms at the disposal of the Council for meetings.

Several members of the Union assisted in the work of conducting a "Bird Protection Court" at the Chamber of Manu-

RECEIPTS AND

For Year ended

RECEIPTS.									
				£	s.	d.	£	s.	d.
To Balance—General Fund	...	...	...	18	9	7			
„ „ Coloured Figure Fund	...	...	...	25	18	2			
„ Subscriptions—Arrears	...	...	...	32	12	0	44	7	9
„ „ Current	...	...	...	150	12	6			
„ „ Check-list	...	...	...	24	12	6			
„ „ 1914	...	...	...	19	8	0			
„ Sales— <i>The Emu</i>	...	...	...				227	5	0
„ Exchange, £1 19s. 6d. ; Interest, 8s. 5d. ; Covers, 18s. 1d. ; Tent Hire, £1	...	...	...				29	5	1
„ Donations for Illustrations—H. L. White	...	...	...	12	2	0			
„ „ „ Capt. S. A. White	...	...	...	0	19	6			
„ „ Coloured Figure Fund	...	...	...	3	5	3	13	1	6
„ Advertisements—Coloured Figure Fund	...	...	...	4	0	0			
							7	5	3
							£325	10	7

ASSETS AND

At 30th

ASSETS.									
				£	s.	d.	£	s.	d.
Coloured Figure Fund—Cr. Balance	...	...	...				13	10	8
Library	...	...	...				25	0	0
<i>The Emu</i> in Stock	...	...	...				186	19	0
Illustration Blocks	...	...	...				20	0	0
Subscription Arrears	...	...	...	40	3	0			
Less Prepaid	...	...	...	20	3	0			
							20	0	0
							£265	9	8

Z. GRAY, L.C.A., *Hon. Treasurer.*

MELBOURNE, 1st July, 1913.

EXPENDITURE

30th June, 1913.

EXPENDITURE.							
		£	s.	d.	£	s.	d.
By <i>The Emu</i> , vol. xii.—Printing, &c. ...	...	163	15	0			
Coloured Plate E ...	...	19	12	9			
Illustrations ...	...	26	18	7			
Check-list ...	...	76	12	0			
					286	18	4
„ Library, £3 3s. 4d.; Reference-list, £2 7s. ...	...				5	10	4
„ Postage, £12 13s.; Typing, £4 12s. 6d.; Stationery, £4 11s.; Covers, 10s. 7d. ...	...				22	7	1
„ 1910 Congress, £1 5s.; Tent, £4 16s. 6d.; National Parks Association, £1 1s. ...	...				7	2	6
„ Exchange, £2 1s. 4d.; Commission, 11s. 9d.; Bank Charge, 5s. ...	...				2	18	1
					324	16	4
„ Balance—Coloured Figure Fund, Cr. ...	...	13	10	8			
„ „ General Fund, Dr. ...	...	12	16	5			
					0	14	3
					£325	10	7

LIABILITIES

June, 1913.

LIABILITIES.					
	£	s.	d.		
General Fund, Dr. Balance ...	12	16	5		
Balance ...	252	13	3		
				£265	9 8

Audited and found correct.

W. A. BLAIR, }
C. W. WILSON, } *Hon. Auditors.*

MELBOURNE, 18th August, 1913.

factures' All-Australian Exhibition, held this year in Melbourne. Pamphlets dealing with the value of birds and their protection were distributed, and much information was given to visitors to the Court.

The Zoological and Acclimatization Society of Victoria again kindly housed the Union's library, which is under the supervision of Mr. Le Souëf.

Mr. H. L. White, of Belltrees, Scone, N.S.W., with his customary generosity, defrayed the cost of a number of plates which have appeared in *The Emu*. Many valuable papers have been published, notably those dealing with osteology, by Dr. R. W. Shufeldt. Several new birds have been described by members, also hitherto unknown eggs.

In conclusion, it may be stated that there is need for a large increase in membership, and it is hoped that, in the forthcoming year, members will endeavour to induce friends who are interested in our birds to join.

F. ERASMUS WILSON, *Hon. Secretary*.

The address of Mr. Robert Hall, the retiring president, was as follows :—

Fields for Work.

MR. CHAIRMAN, LADIES, AND GENTLEMEN,—

It is pleasing to us to realize the continued progress of the Union since last we met. *The Emu*, in quarterly numbers, shows the useful lines of our development, and we, fortunately, keep with us the definite and sustained interest of the hon. editors. Bird-observers over all the States gather from time to time new springs of information, and their meandering within *The Emu* is a source of satisfaction to us. Here we continue to get the units of bird-lore that build the pages of our publication.

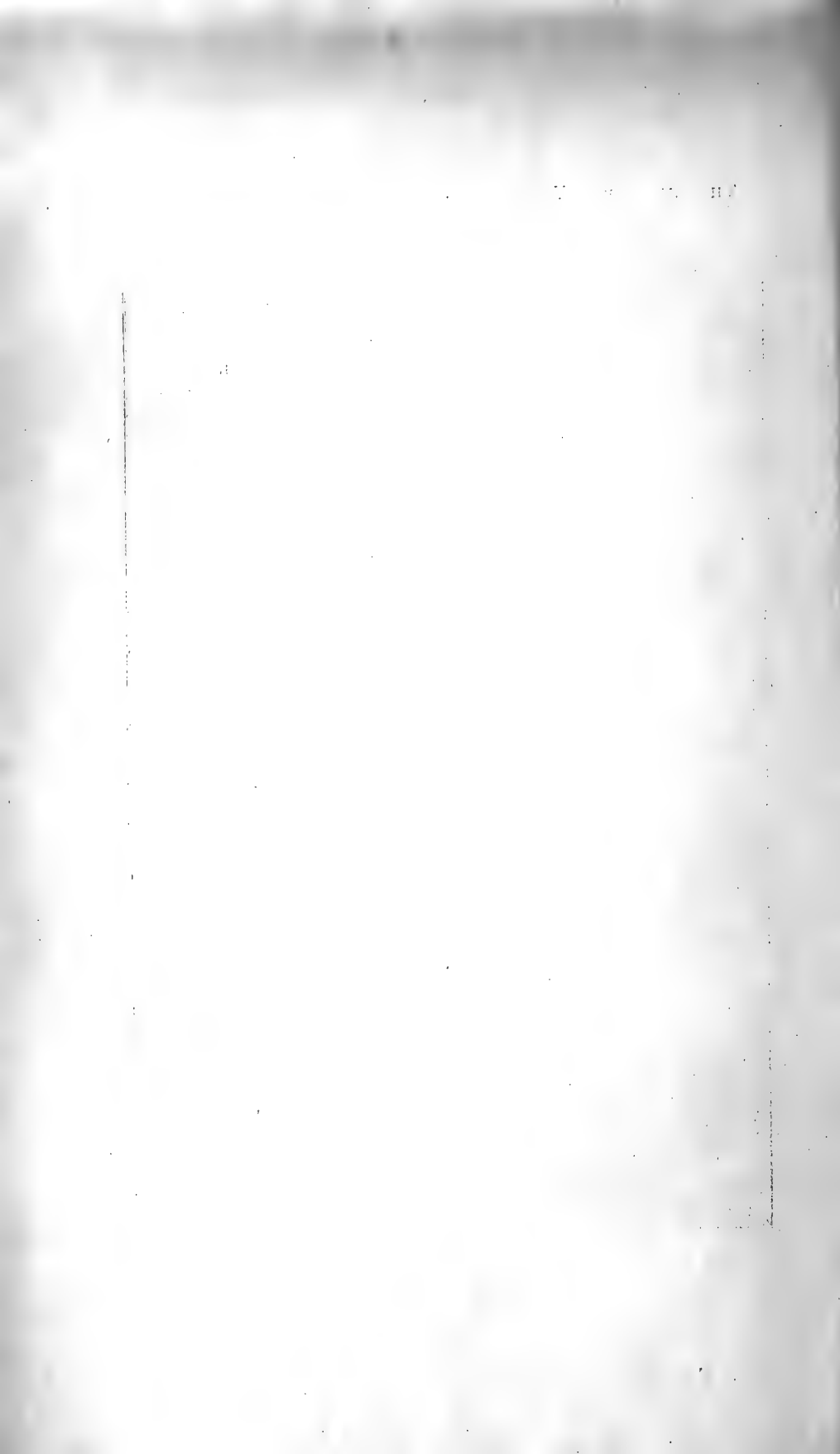
It is not an easy matter to successfully form a Bird Observers' Club unless the district is so fortunate as to have some cornerstones — or, in other words, an available inherited interest. Adelaide, Melbourne, and Sydney are fortunate in this respect, with the result that environment is rapidly making a nature-loving community. Such centres as Brisbane, Hobart, and Perth should be doing better work than they are at present. Let us trust them, in the next year or two, to send to the editors of *The Emu* some useful notices of the work of their little bands.

In the few words of my address to you this evening I prefer that they should be suggestive rather than a multiple of acquired fact. There is, as many of us know, a vast amount of pleasant work to be done from our capital cities as centres, and I would, for example, briefly outline what may be done from Hobart, as one of them, apart from the land forms studied by members of



Mr. Robert Hall, C.M.B.O.U., &c. (Seventh President Royal Australasian Ornithologists' Union).

FROM A PHOTO. BY J. W. BEATTIE, HOBART.



the Union during their visit last year. I allude to the study of Petrels, with its many difficulties. This year some of the best results are being recorded by the different workers on Petrels, the Mawson Expedition in particular. Upon this and Godman's monograph all new workers will have a good foundation. We need to link Australia, Antarctica, and New Zealand, and the work of Mr. Hamilton on the Macquarie Islands will be a strong addition to our knowledge of pelagic birds. Then will follow the relation of the same species of the sub-Antarctic islands * on the east to Kerguelen, Heard and St. Paul on the west. When these data have been placed before us by the more fortunate voyagers still further relationships will follow—viz., those of the Weddell Sea and Gough Island † and of the North Atlantic visitors.

A series of maps showing the geographical distribution of the Penguins and Gulls, as well as that of the Petrel-like birds, in the south, would make a fascinating study. The family of Albatrosses, with its distribution shown in colour, would surely prove to be a fine teaching factor. This would further develop an interest along lines laid down by the Union. The present drawbacks to map-making will be partly removed if the Mawson Expedition has been fortunate enough with opportunities.

Difficulties are evident even with a family of such large birds as the *Diomedeidæ* in the recognition of species when the species themselves are so ill-defined. Take, for example, a skin from the waters of Macquarie Island that recently came under my notice :—

Cross bars on mantle and back agreeing with *D. exulans* ; wing coverts of Godman's figure ‡ of *D. regia* being more strongly freckled than in this specimen, making it more like the wing of *D. chionopecta* than that of *D. exulans*.

In the same way we are troubled with the distribution of Pelecanoides. At present the data on these little Diving-Petrels are too meagre. Many valuable notes and skins are expected from Macquarie Island, which will help us to know the distribution of this genus. *P. urinatrix* has been located on the Macquaries, Aucklands, and South America ; *P. exsul* on New Zealand, Kerguelen, and Crozet waters. The questions of inter-breeding and dimorphism will probably be studied.

A matter of interest to sub-Antarctic workers in relation to South-Western Australia is the distribution of *Æstrelata brevipes*, as it is a bird of the Northern Hemisphere visiting the waters of Cape Leeuwin.

Æstrelata neglecta is a known Australian bird which penetrates into the Antarctic as a visitor. Does it come westward to Tasmanian waters ? The same may be thought of *Pelea lineata*, which has occurred off Banks Peninsula, New Zealand. It will

* "Sub-Antarctic Islands of New Zealand," E. R. Waite (1909).

† "Scottish Antarctic Expedition," *Ibis* (1906).

‡ "Monograph of Petrels," fol. 5, pl. 90 (1910).

be found, probably, that the longitude of Tasmania is its occasional western boundary. *Puffinus assimilis* has been recorded from such widely separated islands as Gough and Kermadec. The Gough species will probably be found to disagree with our species in so far as it will become a good sub-species. *Procellaria pelagica*, the "Mother Carey Chicken" of the Northern Hemisphere, passes into the extreme limit of Antarctic floating ice. If *Puffinus kuhli* deflects from the same course eastward it might be that this European bird occasionally does the same, touching our extreme western waters. This is work for the fishermen-ornithologists of Western Australia rather than those of Tasmania. The same applies to *Diomedea carteri*, which is found off Gough Island, in the South Atlantic, and North-Western Australia, and possibly, between breeding seasons, directly west of Tasmania.

Estrelata solandri has been recorded from Bass Strait, but, as there is a doubt of its specific value, it leaves some interesting work to be done. While tracing the distribution its value as a good species will be tested. *Estrelata leucoptera*, recorded in the "Official Check-list" as found in eastern Australia, has been found just south of Tasmania. *Prion vittatus* and *P. banksi* separately range into each other, but much field data are required.

In Godman's "Monograph of the Petrels" no fewer than fifty-nine species of *Procellariiformes* are recorded as found in Antarctic waters. The most of these touch the Australian seas, and a question is, How many? We have fairly well fixed the number in the more easily accessible rookeries; but I think that, with more careful identification, a number of others will reveal their true selves.

We should connect, with more certainty, New Zealand with our continent by means of Macquarie Island. Long ago one of our own members recorded* three genera—*Puffinus griseus*, *Prionotus cinereus*, and *Halobæna cærulea*—as ranging across from New Zealand by nesting in the Macquaries; but this was merely a nucleus of our knowledge of the distribution of Australian ocean-going birds. We have still to learn of those which range between island and island, island and mainland, between mainlands, endemic to islands or continents, Australia outwards in the quarters of the compass, between northern and southern waters, and east to west upon Australian shores as well as those adjacent.

On the Pacific Ocean border of our continent there is a most interesting series of species, ranging between Queensland and Antarctica, New Guinea and New Zealand.

So far in time very little attention has been given to the numerical value of the species of sea-birds in their relation to fishing grounds. It has been reported† that the eastern waters of Flinders Island could give the most plentiful supply of fish in south-eastern Australia; and it is there that the great mass of the

* "Nests and Eggs of Australian Birds," pp. 894-896 (Campbell).

† F. T. Endeavour research.

Australian Gannet locates itself when the young need their supply. The movements of large bodies of Terns are an indication of shoals of fish. One wonders how the reduction of *Puffinus brevicaudus* (Mutton-Bird), in its relation to cephalopods, will affect our deeper fishing grounds. In the study of the migration of this Petrel some valuable light will fall upon the balance of things.

It is further to be hoped that some member of the Union, living upon the coast-line, will give us data with regard to the value of marine birds as destroyers of insecta and crustacea. It is well known that our Silver Gull (*Larus novæ-hollandiæ*) is a benefactor to man in this respect. We need to prove why the better protection is necessary of what are considered to be birds outside the walk of man so far as their economic value is concerned.

At the present time much interest is being centred in re-afforestation, because a vandalism that has been working quietly for fifty years is now becoming evident. The same will dawn upon our people with regard to the need of a better knowledge of our native land-birds. The opening of the country by means of cultivation is already demanding serious interest. At present two enemies to fruit-growers are doing much damage in a suburb of Hobart owing to the lack of insect-eating birds, which are not being encouraged to stay about. I refer to an aphid and a small curculio. What has been done by anti-plumage laws and the lessening of the exportation of live birds is very fine; but the truth is, in the words of a former Prime Minister of the Commonwealth—the women of our country have more power for the good of this cause than even a combination of State Governments and Commonwealth.

It is in this work of education that the help of our Union has shown itself, and at no distant day the agriculturists of south-eastern Australia, in particular, will realize the value of field research done in their favour. In the interval, every encouragement to the better protection of birds, as a whole, within the area of closer settlement should be continued. To this end the Education Departments are distributing and modelling the rough-hewn material which we are supplying in *The Emu*, and it is a happy union of strength and usefulness.

Results of observations by competent field naturalists will continue to come forward until we shall be able to chart the work annually to be done by certain birds throughout the Commonwealth. There will be a fine summary of the value of their lives before the Union is many years older. It will be then that guides for the following years could be supplied. Just as grain-crops and wool-clips can be fairly accurately judged at the last moment, so will the movements of the more common birds in relation to our and their food supply.

In the course of the year some important events have occurred that may have far-reaching results. There was, foremost, the publication of the "Official Check-list" of the Union. A strong desire on the part of the committee entrusted by you to draw up

the list was evident when it set out to compile a list of unerring simplicity. The principal thought was in the interest of a growing community already burdened by a highly developed range of learning. The law of priority of name was partly sacrificed. It seemed best not to deviate from the established nomenclature, which was working well. Certainly, the day will arrive when geographical differences in our birds will be still further studied; but for the general working of such a national list we are, as a mass of people, not yet ready to grapple with them. In the meantime we have Mr. Gregory Mathews carefully and finely making his study.

Recently our attention was drawn by Mr. A. J. Campbell to the nearly perfect collection of the eggs of Australian birds in the possession of Mr. H. L. White, of Scone, N.S.W. When that collection is completed, or nearly so, and when the day arrives for the administrators of the Federal Capital to be in need of the finest collection in Australia, we may hope that Mr. White's cabinets will be vested in the leading institution of the nation by lease in perpetuity, or gift, by the owner and constructor. It will be a fine opportunity to do a great thing, and I should like to be in such a position as the donor to the nation of a collection so fine in most respects.

Apart from the Antarctic Expedition being conducted by Dr. Douglas Mawson, other events have occurred since last we met. Though not so great, they are of merit. In the pages of *The Emu* we find their records, and the hon. editors are ever on the watch for more of equal value.

The River Excursion.

BY ALEX. CHISHOLM, R.A.O.U.

UNDER the most pleasant weather conditions, the trip up Australia's great waterway was commenced at Murray Bridge on Wednesday, 26th November. South Australian members and those visitors who had been attending the congress met the rest of the Victorian representation at this township, and before noon the party was well on the way up-stream per the s.s. *Arcadia*. This steamer had been chartered for the occasion by Captain White, and it proved very satisfactory. The *Arcadia* could work well, and its management in all departments left nothing to be desired. The passenger list was as follows:—Mr. A. H. E. Mattingley, C.M.Z.S. (Victoria), leader; Capt. S. A. White, Messrs. J. W. Mellor, F. R. Zietz, J. W. Hosking, F. M. Angel, P. Runge, S. Sanders, P. W. Mellor, E. G. Mayo, R. Crompton, L. Crompton, H. W. Andrew, C. Trescowthick; Mesdames John F. Mellor, J. W. Mellor, and S. A. White, Misses W. Mellor, R. Toms, and L. M. Farr (South Australia), Dr. J. Burton Cleland (N.S.W.), Messrs.



River Murray, showing typical fringe of Red Gums (Eucalypts) and Steamer *Arcadia*.

FROM A PHOTO. BY D. LE SOUEF.

W. H. D. Le Souëf, A. H. Chisholm, H. B. Slaney, Dr. E. Brooke Nicholls, Dr. J. A. Leach and Mrs. Leach (Victoria).

Having nothing very definite in view in the early stages of the trip, the party sat back and enjoyed the "most glorious beauty of the day"—the blue sky, the pretty shades of green created by the sunlight slanting among the reeds and willows, the music of the Reed-Warblers that made merry right along the miles of reed-beds, and the striking wing-work of the wind-wrestling Tern and majestic Pelican.

The first "field work" was undertaken in the afternoon, when the Mypolonga swamps were reached. While the leader and a number of others boated up an attractive little creeklet and worked among water-birds for an hour or so, the rest of the party prospected on shore. At the present time the South Australian Government is proceeding with the work of reclaiming these swamp areas, and such contrasts in locomotion as bullock teams and a miniature train were noted hard at work. It is a good policy, this swamp reclamation, but one may express the hope that the South Australian Government will see the wisdom of reserving certain areas as breeding-grounds for the valuable water-birds that at present abound. As a slight digression, the Government may be offered a word of congratulation on the prompt action it recently took to put a stop to the "potting-shooting" at all kinds of birds that was being indulged in by a "scarce-half-made-up" brand of "sportsman" on river steamers; and if a further digression will be pardoned by the editors and the Premier of South Australia, it will do no harm to draw the attention of the latter gentleman to the desirability for moving in the matter of preserving valuable timber along the river-banks. Perhaps, however, this matter is being held over only till the States have satisfactorily adjusted their various ideas concerning the locking of the river.

While the evening meal was proceeding, the brisk little town of Mannum (24 miles from Murray Bridge) was touched, and the night-halt was made at a wood-siding 10 miles up. Some of the party slept ashore (happy in the possession of stretchers), and these received the full benefit of the dawn chorus contributed by the frogs, Swans, Bitterns, and Laughing Jackasses. The notes of none of these is particularly musical, and those who looked for the burst of melody that usually greets the rising sun in the depths of the bush had, perforce, to content themselves with admiring the placid beauty of the river. These wood-sidings, it may be remarked, are almost as much an institution on the Murray as is the fishing industry, practically every river-sider keeping a supply of wood for the steamers.

A couple of hours' run after the 8 a.m. meal brought the party to Schultze's Landing, where a halt was called till mid-day. The country there was not particularly inviting, but there were some good swamps on the right bank, and one of these accommodated a magnificent flock of Pelicans. The easy majesty and careless

grace reflected in the flight of this fine bird sent our most poetic-minded Melburnian into a brown study searching for a fitting description thereof.

As the willows and reeds fell away the cliff country came into view—mile after mile of picturesque walls with but short breaks between each half-mile reach. Every one of these cliffs had its colonies of Fairy Martins (*Petrochelidon ariel*), and it was among specimens of these birds that Dr. Cleland found the Angas tick.

Passing Purnong, a straight run was made for Cournamont, a little fishing landing whose name is probably a perversion of "Cormorant." A rookery of these birds has long been constituted in the swamp trees at the end of the cliffs, but it was not this that was looked for so much as the cliff-building Cockatoos (*Cacatua galerita*). They were there in hundreds, and made a striking picture as they dashed wildly out of hollows 150 feet above the water and rent the air with a continual harsh "Kar-r-r." It would be interesting to know how the young cross the wide stretch of water from their inaccessible cliff-dwellings.*

From this point a straight run was made through the afternoon and two hours in the soft evening air. On the Friday the weather began to grow decidedly warm, and most of the day went by on the river—steaming for a promised land somewhere "between Morgan and Renmark." On this stage excursionists had plenty of time to pay attention to the scenery, and to shout fraternal greetings to fishermen or little parties of blacks along the stream banks. Passing interest was taken in the ruins of the old homestead built by the late John Eyre, somewhere in the early forties, just a few miles down stream from Blanchetown. Going ashore before sunset at a spot 7 miles above this little town, most of the party had a ramble round a dry stretch of mallee on a table-land above a cliff; but it was not rich in bird-life, and in the rarity of other notes the incessant "Bubble-up" of *Geopelia placida*—"the Peaceful"—became monotonous almost to the point of irritation. They minded one of the two Doves in whose "sweet, sad voices" Shelley found

"Despair

Mingled with love and then dissolved in sound."

However, the customary evening and morning dip in the river was calculated to wash all cobwebs from the mind as well as dust from the body. The sky overcast, and a fierce wind came out of the north on the Saturday morning, and Morgan was found sweltering in a heat of 110° in the shade. Up-stream then irrigation settlements were more numerous. There was little scope for field-work adjacent to them, so that no stoppage was called until rather a pretty little spot termed Moullein's Bend was reached, and made the week-end camping-place. Above the cliffs at this bend some rather picturesque sandy mallee, thickly

* It is interesting to note that these famous and historic Cockatoo cliffs are mentioned by Gould ("Handbook," vol. ii., p. 4).—EDS.



River Murray and Cockatoo Cliffs.

FROM A PHOTO. BY D. LE SOUEF

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covered with spinifex, was prospected, and a good number of birds noted.

On Sunday morning the South Australian Director of Irrigation (Mr. M'Intosh) called on Capt. White, and intimated that water-birds, and more especially Swans, were nesting on Lake Barmera (or, as it is usually termed, Lake Bonney), a sheet of water about 60 miles up-stream. This, then, was made the objective, the leader being more impressed with the possibilities of the lake than what he had formerly looked for—the country “between Morgan and Renmark.” This Sunday was one of the hottest of days, but the great blue sky smiled as though it had others to follow—as, indeed, it had. By steaming right on from 1.30 p.m. the prosperous settlement of Waikerie was reached just as the church bell was “calling the people to some other prayers,” and, after a brief halt, the *Arcadia* went right on till 10 p.m. Keeping up the pace next morning, the steamer reached Bell Rock, the nearest point to Lake Barmera, and somewhere adjacent to Cobdogla, early in the afternoon. At this point it had been expected to find vehicles waiting to take excursionists across the 6 miles of country to the lake; but these did not materialize, and so most of the party started out to walk the distance. They were, however, prevented from reaching the goal by a lack of knowledge of the locality, by the heat, and by the very many objects of interest to be seen on the sand-hills close to the river. They were really very pretty indeed, these sand-hills, with the wealth of colouring given by white daisies, hop-bushes of various greens, and numerous flowering shrubs. Probably they would, in the youth of spring, provide a happy hunting-ground for the ornithologist, for even in December birds were plentiful and varied. Small companies of the beautiful little *Malurus assimilis* darted in and out of scrub, to be joined now and then by the fiery sprite *M. melanotus*; *Pachycephala gilberti* emitted its Robin-like “Chup-chup” after every gunshot; *Drymodes brunneopygius* was quite common, and, after a harsh “Charr charr” and a characteristic flick of the tail, did not run away from anyone who stood quietly; the *Ocyphaps lophotes* of the whistling wings was very numerous, and so, too, was *Barnardius barnardi*, as well as *Artamus*, *Campephaga*, and many other common forms. But perhaps the prize beauty of the region was *Cacatua leadbeateri*, the handsome Major Mitchell Cockatoo. A number of these birds frequented an attractive little billabong at the foot of the sand-ridges, and a lovely sight they made in flight, when the rich colours of the under-wings and crest were displayed. In the mud at the edges of this billabong a number of Emu prints was noted, but the big birds themselves were not seen. The water was clean and soft, but of little use as a thirst-quencher—and thirsts took some quenching when the temperature was about 115° in the shade.

On the Monday evening a sand-storm—a striking sight—gave promise of a cool change, but the weather was much the same on

the Tuesday, and Dr. Cleland still found plenty of the malarial mosquito pests available.

The return journey was commenced at 1.30 p.m. on 2nd December, and at the small Overland Corner Dr. Cleland was dropped, he purposing to strike across country.* Going right ahead, Waikerie was called on at 7.30 o'clock, just as hot winds were travelling across its sand. These fruit-growing settlements probably have a future, but it certainly will not do for prospective settlers to see them first while a dust-storm is raging.

The night was spent at Boggy Flat, and Morgan regained at mid-day on the Wednesday. Further good pace was made in the afternoon, and the evening halt called at Nortel. It was a calm, soft night, and, while a young moon did its best to beautify the river, Dr. Leach lectured to an interested assemblage on the general aspects of Australian bird-life. Quite an animated discussion followed, and the lecturer was accorded a vote of thanks. A "below-stairs" address on "Radium" later was not so successful.

The looked-for cool change came up on Thursday, a sharp, cold hailstorm occurring before mid-day. Some time was lost by a boat overturning when aborigines came on board with Cockatoos, but after that there was no stoppage till Mourkain, near Foster, was reached. There Mr. D. Hutchinson received the party hospitably. He has some fine fossil cliffs and swamp lands, and the reservation of the latter should give a home to thousands of birds. Crested Grebes nest there freely.

From that onward the only noteworthy stoppage was at a point between Mannum and Murray Bridge, at mid-day on Friday. This was the occasion of felicitous speeches. Mr. Mattingley proposed a hearty vote of thanks to the skipper of the *Arcadia*, Capt. Wolters, for his able management of the trip, and presented him with a signed chart of the river. Mr. J. W. Mellor seconded the motion, which was carried and responded to. A special vote of thanks was also accorded Capt. S. A. White for his good services, and the ladies' general thanks were expressed by Mrs. J. F. Mellor and Mr. Runge. So the excursion terminated on Friday, 5th December. Results had been hampered by no one having a first-hand knowledge of the best stopping-places, by the weather being too hot, and the time of the year too late; but nevertheless the 200-mile trip had been productive of a profitable and pleasant time.

Birds Identified, Lower Murray Excursion, December, 1913.

BY (CAPT.) S. A. WHITE, M.B.O.U., &c.

NOTE.—The following list is in the order of the R.A.O.U. "Check-list," and according to special request made in *The Emu*

* See separate account, p. 129.

vol. xii., p. 290, but is made under protest, for I believe in the strict law of priority as set down by the National Code, and in the use of trinomials to describe sub-species.—S. A. W.

Dromaius novæ-hollandiæ. Emu.—Although not seen, fresh tracks and feathers were noted on more than one occasion, where the birds watered at the river.

Geopelia tranquilla. Ground-Dove.—These lovely little birds were often met with, and their deep cooing sounded refreshing on a hot day.

Phaps chalcoptera. Bronze-winged Pigeon.—These were fairly numerous in places, rising from the ground with a great whirring sound, and often perching on the limb of a mallee tree.

Ocyphaps lophotes. Crested Pigeon.—The Crested Pigeons were remarkably quiet, and fairly plentiful in places. Nests with young were observed, and a photograph was taken.

Tribonyx ventralis. Black-tailed Native-Hen.—Numbers seen on the river-bank and in the lignum swamps.

Gallinula tenebrosa. Black Moor-Hen.—Several seen on the river-bank.

Porphyrio melanotus. Bald-Coot.—Plentiful in all the reed and flag patches on swamps and back-waters. Found breeding

Fulica australis. Australian Coot.—Two or three Coots were seen on a large lagoon. They never collect in such numbers on the river as they do lower down on the lakes.

Podiceps gularis. Black-throated Grebe.—A few were seen in the swamps.

Podiceps australis. Great Grebe.—Seen on the back-waters, and were reported by residents as having nested in numbers at certain places.

Hydrochelidon fluvialis. Marsh Tern.—Great numbers of these pretty Terns were observed fishing on the back-waters and sometimes on the main stream during the first days of our progress. We met them in the same localities on our return down stream.

Lobivanellus lobatus. Spur-winged Plover.—Fairly plentiful on the flats near the river.

Ægialitis nigrifrons. Black-fronted Dotterel.—An odd bird or two met with all along the river.

Himantopus leucocephalus. White-headed Stilt.—A few Stilts were seen on the wing passing from one swamp to the other. I have never known these birds to nest on the Murray River; they seem to prefer the samphire flats of the plains. The absence of these birds on the swamps is due, no doubt, to their being away nesting.

Gallinago australis. Australian Snipe.—Mr. J. W. Mellor procured a fine specimen of this bird. It was a solitary, and was perched on a log near the water.

Edicnemus gallinarius. Stone-Curlew.—Fairly plentiful, judged by the numbers heard calling at night.

Ibis molucca. Australian White Ibis.—A few seen feeding in the swamps near Murray Bridge. The bulk of these birds must have been nesting in the flags lower down the river.

Carphibis spinicollis. Straw-necked Ibis.—The note for the White Ibis well answers for this bird also.

Platibis flavipes. Yellow-billed Spoonbill.—A few seen perched on dead trees over swamp.

Herodias symatophorus. Australian Egret.—Fair numbers of White Egrets were seen perched on trees bordering swamps.

Notophox novæ-hollandiæ. White-fronted Heron.—These widely-distributed birds were observed all along the river.

Notophox pacifica. White-necked Heron.—One or two birds observed on the early part of the trip.

Nycticorax caledonicus. Nankeen Night-Heron.—Night-Herons were plentiful, and several large rookeries came under our notice. These were situated in the thick foliage of the weeping willows. Many immature birds were perching with the adults.

Botaurus pæciloptilus. Australian Bittern.—Two or three were seen passing between clumps of reeds, and their deep booming note was heard all night if we happened to be near the birds' haunts.

Chenopsis atrata. Black Swan.—Black Swans seldom visit the small swamps in the day-time for fear of being molested. Messrs. Mackintosh and Quinn, Government officials, who had just returned from a visit to Lake Bonney, stated the Swans were nesting in great numbers there.

Chlamydochen jubata. Maned Goose.—These handsome birds were not numerous. At many places on the river where, twenty years ago, the birds were in hundreds, none was noticed.

Anas superciliosa. Australian Black Duck.—Fairly numerous, in pairs and small families of six or seven.

Nettion gibberifrons. Grey Teal.—Not numerous. Where we saw one there were five hundred twenty years ago.

Spatula rhynchotis. Australian Shoveller.—A bird or two seen on the river.

Nyroca australis. White-eyed Duck.—A flock of a hundred or more seen on a back-water.

Biziura lobata. Musk-Duck.—These birds were often seen on the edges of reed-banks, and at the approach of danger dived. Some fine old birds with large gular pouches were observed.

Phalacrocorax carbo. Black Cormorant.—In fair numbers, perched on dead trees and snags in the water.

Phalacrocorax sulcirostris. Little Black Cormorant.—Not so plentiful as the larger species. To all appearances some of these birds were nesting in the sides of the high cliffs.

Phalacrocorax melanoleucus. Little Pied Cormorant.—These birds were seen on two or three occasions.

Plotus novæ-hollandiæ. Australian Darter.—One bird was observed sitting on a dead tree near Murray Bridge.

Pelecanus conspicillatus. Australian Pelican.—These noble birds were seen both on the river and on the swamp.

Circus gouldi. Allied Swamp-Hawk.—Several Harriers were seen soaring over the reed-beds.

Astur approximans. Australian Goshawk.—Two Goshawks were seen hawking over the big timber.

Uroaëtus audax. Wedge-tailed Eagle.—Few seen where they were once plentiful along the river.

Haliastur sphenurus. Whistling-Eagle.—These birds were very numerous, and were often seen taking dead fish from the bank or surface of the water.

Falco lunulatus. Little Falcon.—They seemed to prefer the high cliffs on the river, where numbers were seen flying or perched on the face of rock.

Hieracidea berigora. Brown Hawk.—Members of the party reported having seen this bird.

Cerchneis cenchroides. Nankeen Kestrel.—These small, familiar Hawks were plentiful, and no doubt nested in the cliff crevices.

Ninox boobook. Boobook Owl.—Although heard at night, did not seem to be plentiful.

Glossopsitta porphyrocephala. Purple-crowned Lorikeet.—Numbers feeding in the flowering mallee.

Cacatua galevita. White Cockatoo.—Numbers of these fine birds were nesting in the high cliffs rising from the river. The numbers of Cockatoos are decreasing each year, poisoned wheat being responsible for their destruction.



Young White Cockatoo at Entrance of Nesting Burrow.

FROM A PHOTO. BY A. H. E. MATTINGLEY.

Cacatua leadbeateri. Pink Cockatoo.—One or two birds seen. These handsome birds were in thousands on the river twenty years ago.

Cacatua roseicapilla. Rose-breasted Cockatoo.—A few birds were observed during the trip.

Calopsitta novæ-hollandiæ. Cockatoo-Parrot.—Not numerous; seen only once, and most likely came in from the back country to water;

Polytelis melanura. Black-tailed Parrot.—A few of these fine Parrots were seen flying swiftly by. They seem to be very scarce where I once knew them to be numerous.

Platycercus flaveolus. Yellow Parrot.—Numerous along the river, and were mostly to be observed among the big gums.

Barnardius barnardi. Ring-necked Parrot.—Fairly numerous. The immature male takes on the same dull plumage as the female. These Parrots seem to prefer the mallee to the big timber.

Psephotus hæmatogaster (?) Crimson-bellied Parrot.—Some of the members of the excursion described a bird as the above, but I am doubtful of its identity.

Psephotus hæmatonotus. Red-backed Parrot.—On some of the grassy flats these pretty birds were numerous, but they will soon disappear as the imported Starling takes up their nesting hollows.

Melopsittacus undulatus. Warbling Grass-Parrot.—Small flocks of these birds were seen coming in to and going out from water.

Dacelo gigas. Great Brown Kingfisher.—Fairly plentiful all along the river in the big timber.

Halcyon pyrrhopygius. Red-backed Kingfisher.—The mournful yet harsh cry of this bird was heard at several halting-places. A specimen was procured for identification.

Halcyon sanctus. Sacred Kingfisher.—The well-known call of this bird was heard at one stopping-place only.

Merops ornatus. Australian Bee-eater.—Bee-eaters were very numerous in many localities we visited.

Cypselus pacificus. White-rumped Swift.—One sultry, hot day these birds were noticed flying overhead.

Hirundo neoxena. Welcome Swallow.—Plentiful on many occasions.

Cheramæca leucosternum. White-backed Swallow.—Often seen, especially near sandy ridges, where, no doubt, they were breeding.

Petrochelidon nigricans. Tree-Martin.—Found nesting in the rocks on the face of high cliff.

Petrochelidon ariel. Fairy Martin.—Great numbers were flying along the river. Huge masses of their strange, retort-shaped nests were seen attached to the face of the rocky cliffs just above the water.

Petroica goodenovii. Red-capped Robin.—These little birds were seen at Bell Rock.

Smicromnis brevirostris. Short-billed Tree-Tit.—Plentiful along the river; found in mallee and red gum alike.

Falcunculus frontatus. Yellow-bellied Shrike-Tit.—Mr. Chisholm informed me that he observed a nest of this bird in the course of the trip.

Oreoica cristata. Crested Bell-Bird.—The well-known call of this very widely distributed bird was heard on several occasions. I have never found these birds very plentiful near the river; they become more numerous as one gets back into the mallee.

Pachycephala gilberti. Gilbert Whistler.—These birds were very plentiful at Bell Rock, between Lake Bonney and the river. Many pairs were located in the pine scrub. They were very wary, and moved on in front of us. It was necessary to procure one for identification, and this was managed by standing amongst the lower limbs

of a pine tree and calling a bird up. Although no nests were seen, I feel sure they were breeding at the time of our visit.

Rhipidura motacilloides. Black-and-White Fantail.—These homely birds were met with all through, out in the scrub as well as round homesteads.

Seisura inquieta. Restless Flycatcher.—These birds were somewhat numerous, and their strange grinding call was to be heard at nearly every place we landed. One nest containing young was seen, and I fancy that many more pairs were nesting.

Graucalus melanops. Black-faced Cuckoo-Shrike.—Seen flying over the river, and were met with in the scrub.

Campephaga humeralis. White-shouldered Caterpillar-eater.—These pretty and useful birds were met with in the mallee, where they were found breeding. In one instance two young birds were found so large that they could only just hang to the rim of the nest; the parent birds put themselves into a great fuss, and almost dashed into one's face in their frantic efforts to drive the intruder away.

Pomatorhinus temporalis (?). Australian Babbler.—This bird was reported to have been seen in the thick scrub back from the river.

Pomatorhinus superciliosus. White-browed Babbler.—A common bird all through the river districts. They will keep so quiet in the middle of the day that often one has no idea of their presence till passing under a low tree, when they will break out into a babel of discordant cries.

Acrocephalus australis. Australian Reed-Warbler.—Found wherever reeds or flags afforded them shelter. There is no doubt that the Reed-Warbler is one of Australia's greatest songsters.

Acanthiza chrysorrhoa. Yellow-tailed Tit-Warbler.—Observed in many places along the river-bank.

Acanthiza uropygialis. Chestnut-rumped Tit-Warbler.—A specimen procured by Dr. Cleland for identification. They were not numerous.

Pyrrolæmus brunneus. Redthroat.—Observed this bird for the first time on the trip in the low bush between Lake Bonney and the river. They were singing most sweetly. A specimen procured shows much less reddish marking on the throat.

Malurus cyaneus. Blue Wren-Warbler.—Observed in the first part of the trip.

Malurus melanotus. Black-backed Wren-Warbler.—I was not at all surprised to find this glorious little bird, for it was from the Murray mallee belts that John Gould procured his type. On comparing this bird with skins procured by Mr. A. J. Campbell from the Mallee in Victoria they are found to be identical.

Malurus assimilis. Purple-backed Wren-Warbler.—This is the true *assimilis*, and not the bird found further north and north-west and in Central Australia. The blue of the head and ear coverts is of much darker shade than in the Central bird, which I have named *M. lamberti morganii*.*

Artamus personatus. Masked Wood-Swallow.—Fairly numerous, and found breeding in the mallee.

Artamus sordidus. Wood-Swallow.—This very widely distributed bird was found almost everywhere we landed.

* See *Austral Avian Record*, vol. i., p. 126; also *Emu*, ante, p. 28.

Colluricincla harmonica. Grey Shrike-Thrush.—These fine songsters were fairly plentiful on the river-flats, and were seen at the tops of the highest gums.

Grallina picata. Pied Grallina.—The Murray River is the home of these dainty birds. They were seen in numbers each day.

Corcorax melanorhamphus. White-winged Chough.—Met with in large families, mostly in abraded plumage, owing to their having finished nesting. A discussion took place *re* the colouration of the eye. Some contend that when the bird is alarmed or worried it can produce a scarlet membrane in front of the eye. My experience has shown me that the eye is deep red during nesting time.

Aphelocephala leucopsis. Whiteface.—A very common bird wherever we went.

Neositta pileata. Black-capped Tree-runner.—Met with in the mallee and pine scrubs. A nest containing young was observed.

Climacteris scandens. Brown Tree-creeper.—These birds were numerous amongst the big timber; they were also seen in the mallee. There were very large broods of fully fledged young moving about with parent birds.

Pardalotus striatus. Red-tipped Pardalote.—Were fairly plentiful amongst the red gums growing on the flats and near the river.

Melithreptus brevirostris. Brown-headed Honey-eater.—One or two large parties of these birds were met with searching amongst the low scrub for insect life.

Glyciphila albifrons. White-fronted Honey-eater.—Numbers of these birds were found in the low scrub between Lake Bonney and the river. They were attracted by the flowering shrub known as the wild or native fuchsia (*Correa speciosa*). Many fully fledged young birds were with their parents. I noticed the latter jumping about on the ground in search of insect food. One's attention is attracted by this bird's zig-zag flight.

Ptilotis sonora. Singing Honey-eater.—Was met with many times, and its melodious note often heard.

Ptilotis ornata. Yellow-plumed Honey-eater.—These birds were not so numerous; those observed had much darker plumage than those found on Eyre Peninsula.

Ptilotis penicillata. White-plumed Honey-eater.—Found very plentifully all along the river-bank, in the low scrub as well as among the gums.

Myzantha garrula. Noisy Miner.—One of the most plentiful birds to be found on the Murray banks.

Acanthogenys rufigularis. Spiny-cheeked Honey-eater.—This bird is plentiful all along the river banks, and its peculiar gurgling call is heard at its best when echoed amongst the high cliffs—a locality it likes to haunt, and where I met with this bird for the first time twenty-five years ago.

Entomyza cyanotis. Blue-faced Honey-eater.—This bird was met with just after leaving Mannum. This is by far the lowest point down stream it has been known to come. James Cockerell collected it at Mildura, but that is hundreds of miles up stream. The young were with the parent birds, showing that they must have nested in the

locality. A single specimen was obtained by Mr. E. Ashby near Mannum last year, and is now in the Adelaide Museum.

Philemon citreogularis. Yellow-throated Friar-Bird.—Numbers of these birds were seen. They fly high at times, passing over the tree-tops. Large young were flying about with the adult birds, the bird being called the Yellow-throated because the immature bird has yellow feathers on the throat, while the matured bird shows no trace of any yellow.

Anthus australis. Australian Pipit.—Numerous all along the river, especially where any clearings extend.

Stagonopleura guttata. Spotted-sided Finch.—These pretty little Finches were seen on the edge of cultivated ground.

Corvus coronoides (?). Australian Crow.—Birds were seen which answered to this species, but one cannot be sure without handling the bird.

Cracticus destructor. Collared Butcher-Bird.—This Butcher-Bird was once very plentiful in the Murray districts, but it seems to have almost disappeared; only one bird was seen in the course of the trip.

Gymnorhina leuconota. White-backed Magpie.—A fair number of these birds was seen, and often they came to the water's edge in search of insects and worms in the damp earth.

Owing to my not being in very good health after the recent trying trip in the interior, I did not get about as much as some of the other members.

Mr. J. W. Mellor informs me that he identified the following birds, viz. :—

Accipiter torquatus. Collared Sparrow-Hawk.

Drymodes brunneopygius. Scrub-Robin.

Megalurus gramineus. Little Grass-Bird.

Artamus leucorhynchus. White-browed Wood-Swallow.

Zosterops dorsalis. White-eye.

Pardalotus xanthopygius. Yellow-rumped Pardalote.

Plectorhyncha lanceolata. Striped Honey-eater.

Mirafra secunda. Lesser Bush-Lark.

Corvus australis. Australian Raven.

Mr. Mellor also informs me he picked up a dead specimen of the last-named species, and that the basal down of feathers was black.

Thus 113 species were identified—a good performance, I consider, for nine days' observation.

Overland Excursion.

BY (DR.) J. BURTON CLELAND, R.A.O.U.

ON the return of the party to Overland Corner at mid-day on Tuesday, 2nd December, the opportunity was taken of returning to the starting-point, Murray Bridge, by a route which promised some interesting country. The plan outlined was to proceed by coach to Renmark, thence across the river to Paringa, and then

journey down by the newly-opened railway line through the mallee to Tailem Bend, spending two days in the mallee itself. Though the time at disposal was limited, and the weather during a portion of it very hot, and, in consequence, the number of birds seen small, this side expedition proved of great interest and indicated some good collecting grounds.

The early coach left Overland Corner at 4.30 a.m. Fortunately, a box seat was available, so that the cool, crisp air could be enjoyed. The road passed for most of the way through open, park-like country, grassed with an abundant growth of spear-grass (*Stipa*), on which the horses fed well, and diversified with scattered sandalwood-trees (*Myoporum montanum*) and patches of open mallee (*Eucalyptus oleosa*, *E. dumosa*, and probably *E. gracilis*). The freshness of dawn and the morning cheerfulness of the birds, the clearness of the atmosphere, and the sweet smell of moisture were a striking contrast to the heat of the mallee-scrub the day before in the hot breath of the dust-storm. About 5 miles out, Lake Bonney (now Lake Barmera) was seen over a grassy ridge, a fine stretch of water. As the 30 miles into Renmark was approached the valley of the Murray was reached again, here opening out into a wide expanse of undulating woody country much below the level of the surrounding plain. The weather was warming up, and the country was becoming more sandy and less interesting, when we passed through a gate and entered on a transformation scene. We were on the outskirts of the irrigation settlement of Renmark, and saw before us a wide road leading on for 4 miles to the town, with orchards and vineyards on each side and homes surrounded by sugar gums, palms, and foliage trees. The desert was blossoming like the rose, when supplied with the wherewithal of water. Little could Sturt have imagined, as his men rowed past the cliff at Renmark in 1830, how the face of the country would change.

With a shade temperature of well over 100°, little was to be done in Renmark. A walk to the new railway station across the Murray at Paringa took one through a thick belt of scrub (eucalypts and acacias) on a higher flat. This scrub appears to occupy a good deal of the extended valley of the river in this part, and should repay careful investigation. *Acanthiza*, probably *uropygialis*, was the only bird specially noticed in the noonday heat. The afternoon was spent, through the hospitality of friends, in a motor-ride round the settlement.

Thursday, 4th December, showed an early rise at 4 a.m., a drive to Paringa, and a train journey starting at 5.20. The wheat-lands of Paringa were gradually left behind and mallee country entered upon, cleared extensively in places. Wherever, along the newly-laid line, the horses had been fed with oats, these had germinated with the late spring rains, and were stooling heavily and bearing well. As the day wore on, a temperature over 100° was again reached, and the weather was unpleasantly hot on alighting at Alawoona, 60 miles down, at 10.15 a.m. A friendly

storekeeper with a galvanized-iron hut allowed his place to be used as a depot for baggage, and a short walk was made in the neighbourhood. A few birds were seen, especially *Glyciphila albifrons*, and Crows were numerous and very tame, allowing one to come well within gunshot.

After a meal in a navvy's "boarding-house," during which everything was covered with dust, a start was made, perched on top of a tank on the contractor's train running on the line now being constructed to Loxton, the destination being a Government Experiment Farm at Veitch's Well, some 5 miles away.

Next morning a short excursion was made into the surrounding mallee to visit a Leipoa's mound. An egg had been taken some weeks before, but my host was afraid that one of the birds, at least, had been shot recently by some of the workers on the railway. The mound was found, carefully heaped up by the bird, but no eggs were met with on scraping away the sand till the dead leaves were reached. My host told me that the birds usually feed some quarter of a mile from the nest, on the little open flats between the mallee-covered sand-hills. They are very tame, and allow one to approach closely. In the course of the walk, *Ptilotis ornata* was frequently seen. It has the habit of *P. penicillata* of occasionally rising into the air, uttering a clear and peculiar note, and then suddenly diving down again into a tree. A trait such as this, manifested in certain birds of a genus and not in others, is unquestionably of considerable importance in indicating the degrees of relationship between the different species. *P. ornata*, *P. penicillata*, and probably *P. leilavalensis* (I cannot recall whether I actually saw these birds exhibiting this action in North-West Australia) exhibit this trait, whilst I have not seen it in *P. sonora*, *P. chrysops*, &c., though I have watched many of these birds. It serves to indicate that *P. ornata* is closer of kin to *P. penicillata* than, for instance, to *P. sonora*. Several Ground-Thrushes (*Cinclosoma castanonotum*) were met with, running amongst the mallee and flying a short distance when disturbed. In the afternoon a group of three or four was seen feeding by the track as we were driving along. Two Dusky Robins (*Drymodes brunneipygius*) were also seen amongst the undergrowth. Other birds noticed were *Pardalotus striatus*, *Corcorax melanorhamphus*, *Acanthogenys ruficularis*, *Colluricincla harmonica*, and *Cracticus*, sp. A family of the pretty Wren-Warbler (*Malurus assimilis*) was also seen, whilst the note of a *Strepera* was heard. A faint note, whose author could not be discovered, may have been a *Stipiturus* (whilst driving, two very small brown birds passed quickly through some bushes), whilst a larger bird, also brown, darted rapidly from bush to bush, possibly an *Amytornis*.

It is interesting to consider that this country is, apparently, devoid of surface water—at any rate, permanent natural water-holes must be few and very far between. Even where the country has been taken up, water available for birds is almost non-existent. Notwithstanding, bird-life seems plentiful, and one can

only conclude that fluid is obtained from other sources. Birds of prey, perhaps, find drink enough in the lizards and smaller birds which they capture. Honey-eaters and other nectar-sipping species may obtain what they require from the blossoms of the eucalypts. Doubtless, in other cases, the precipitation of dew during the cool nights may give a further supply. That moisture was not absent from the soil, in spite of no rain for some weeks, was shown by the fact that some freshly-expanded specimens of a long-stalked puff-ball (*Battarea*, sp.) were found growing in the sand. Probably heavy dews had brought them up.

A start was made next day for the railway station, the opportunity being taken of seeing another Leipoa mound which had been opened. The train was then entered at 10.20 a.m., and Murray Bridge reached about 4.30. A very pleasant impression, added to by the cool change, was left of this mallee country, and the locality was evidently one worthy of a more prolonged stay.

Notes on Some North Queensland Birds.

BY (DR.) W. MACGILLIVRAY, R.A.O.U., BROKEN HILL (N.S.W.)

LATE in 1909 Mr. W. M'Lennan went to North Queensland on my behalf to obtain specimens of the birds and their eggs, and to make notes on their nesting and other habits in that portion of country drained by the Cloncurry, Leichhardt, and Gregory Rivers, the western portion of that tract of land known to all Queenslanders and many others as "the Gulf country," and also at Cape York.

Although Mr. M'Lennan's journeyings have not resulted in the discovery of any very distinct new species, still they have been helpful to me in clearing up many doubtful points as to the identity, distribution, and habits of the various species inhabiting the Gulf country, Cape York, and the islands between Cape York and Raine Island.

After a brief visit to Cairns and the Upolu Bank and Oyster Cay, where he made acquaintance with nesting sea-birds, he went inland by train from Townsville to Cloncurry, arriving there early in January, when he found everything very dry, the wet season not having commenced as early as usual. Hearing that the country was in better condition, owing to early rains, and birds more plentiful, further down the Cloncurry River, he procured an outfit, and journeyed down the river, finally making a permanent camp at the Sedan Dip, about 10 miles north of Byromine Station and about 80 miles from the Cloncurry township.

The rainy season started in earnest soon after his arrival, all the lakes and swamps filling up rapidly, and the river running bank high. Vegetation grew rapidly and rankly along the river-flats and out on the downs. Many small birds nested, and on the

lakes and swamps the wildfowl were soon to be estimated in thousands. After over two months' stay he shifted his camp back to Byromine, and then on to Cloncurry, where he remained for some time, searching the creeks and stony ranges in the vicinity.

On the 5th June a start was made towards the Leichhardt River, the road at first passing through red sandy and stony country, where the timber consisted mainly of mountain gum and silver box; thence across black-soil plains, where gidgee grew in clumps, and bloodwood, river gum, and coolibah bordered the creeks. Birds were not very numerous along this track. Corella Creek was crossed on the following day, and at the crossing, where birds were numerous and water plentiful, a stay was made for the rest of the day.

On the 7th the journey was resumed, passing through gidgee, silver box, bloodwood, and plain country, then low rangy country, till Palm Creek was reached at mid-day, at the Quamby Hotel; thence on to Cattle Creek, 17 miles from the last camp, through hilly country.

On the 8th he went on to Granada Station, thence 12 miles to a creek in the heart of a thick gidgee scrub, passing through gidgee, silver box, and plain country before reaching it. Struthidea were met with here for the first time. Bower-Birds (*Chlamydera maculata*) were numerous in the gidgee.

Next day, the 9th, Donaldson Hotel and Post-Office was reached by mid-day, passing through silver box and turpentine-bush country, in which the Keartland Honey-eater was noted. Thence to Caloola Station, on the Leichhardt River, passing through silver box and gidgee on the plains, mountain gum and spinifex on the hills, bloodwood and wattle (similar to Victorian black wattle), bauhinia, and silver box on the river-flats.

10th June.—A start was made down the river, passing through silver box, coolibah, bloodwood, river gum, and bauhinia, growing on the river-flats. *Dacelo leachi*, *Geopelia cuneata*, and *Ocyphaps* were numerous here.

11th June.—Another 14 miles down the river, when he decided to camp for two days. This stay was lengthened, however, by his horses having strayed. Birds were numerous here, feed and water plentiful. The river banks were thickly clothed with melaleuca, river gum, sandpaper and smooth-leaved figs. A Thrush (*Colluricincla*) was obtained here, which Mr. Mathews considers a sub-species of *C. brunnea*. The variation in this species from Cape York to the Territory seems to be at present rather confusing, and a larger series of specimens from all these regions will need to be examined before any certainty can be arrived at. *Ptilotis unicolor*, *Rhipidura albicauda*, *Myzomela pectoralis*, and *Poephila heeki* were met with for the first time. Other species noted were *Haliastur sphenurus*, *Lophoictinia isura*, *Gypoictinia melanosternon*, *Erythrotriorchis radiatus*, *Ninox ocellata*, *Philemon sordidus*, *Ptilotis flavescens*, *Stigmatops ocellaris*, *Tæniopygia*

castanotis, *Dicaeum*, *Graucalus melanops*, *Artamus minor* and *melanops*, *Climacteris melanura*, *Neositta mortoni*, *Micraea pallida*, *Pachycephala falcata*, *Dacelo leachi*, *Halcyon pyrrhopygius*, *Pardalotus rubricatus* and *uropygialis*, *Ocyphaps*, *Geopelia tranquilla*, *Calyptorhynchus macrorhynchus*, *Cacatua galerita*, *C. roseicapilla*, *C. gymnopsis*, *Melopsittacus undulatus*, *Ptilosclera versicolor*, *Calopsitta novæ-hollandiæ*, *Cheramæca leucosternum*, *Antigone australasiana*, *Choriotis australis*, *Xenorhynchus asiaticus*.

On the 19th a start was made, and Kamilaroy Station reached with one horse. A camp was made near here for 10 days. *Haliæetus leucogaster* and *Myiagra concinna* were met with for the first time.

On the 1st July, still down the Leichhardt, Lorraine Station was reached, and Augustus Downs on the 5th of the same month, where *Poephila personata* was met with. On this station were many lagoons, and wildfowl were abundant. A camp was made on a chain of lagoons 3 miles beyond the station. *Uroaëtus audax*, *Haliæetus leucogaster*, *Haliastur sphenurus*, *Lophoictinia isura*, *Hieracidea berigora* and *orientalis*, *Astur approximans*, *Gypoictinia melanosternon*, *Falco subniger*, *Erythroriorchis radiatus*, *Cerchneis cenchroides*, *Ninox connivens*, *N. ocellata*, *Strix flammea*, *Podargus brachypterus*, *Corone australis*, *Corvus corone*, *Gymnorhina tibicen*, *Cracticus nigrigularis*, *Grallina picata*, *Graucalus melanops*, *Chlamydera maculata*, *Lalage tricolor*, *Climacteris melanura*, *Neositta mortoni*, *Dicaeum*, *Mirafr secunda* (?), *Cisticola*, *Pomatorhinus rubeculus*, *Struthidea*, *Turnix velox*, *Pachycephala falcata*, *Gerygone albigularis*, *Ptilotis unicolor*, *P. flavescens*, *Ocyphaps lophotes*, *Geopelia tranquilla*, *Stigmatops ocularis*, *Conopophila rufogularis*, *Tenipygia castanotis*, *Stictoptera bichenovii*, *Neochmia phaeton*, *Munia pectoralis*, *Poephila personata*, *P. gouldi*, *P. heeki*, *Pardalotus rubricatus*, *P. uropygialis*, *Seisura inquieta*, *Micraea pallida*, *Sauloprocta motacilloides*, *Myiagra concinna*, *Rhipidura dryas*, *Malurus assimilis*, *M. cruentatus*, *Calyptorhynchus macrorhynchus*, *Cacatua galerita*, *C. roseicapilla*, *C. gymnopsis*, *Ptilotes erythropterus*, *Ptilosclera versicolor*, *Melopsittacus undulatus*, *Dendrocygna eytoni*, *Nyroca australis*, *Malacorhynchus membranaceus*, *Chlamydochen jubata*, *Plotus novæ-hollandiæ*, *Platibis flavipes*, *Platalea regia*, *Notophox pacifica* and *N. novæ-hollandiæ*, *Nycticorax caledonicus*, *Herodias timoriensis*, *Mesophox plumifera*.

This camp was struck on the 14th, when the track was retraced for 20 miles, in order to cross the Leichhardt. Next day a start was made on the Gregory River track, and a camp for the night made on a water-hole a mile long and from 30 to 100 yards in width. This water-hole was dotted with small islands, all being thickly clothed in tea-tree, while numbers of blue and white water-lilies grew along the edges. On one of the islands was a Cormorants' old rookery.

On the 17th the track led through heavy forest country all the way to Fiery Downs, a distance of about 20 miles. Next day the Gregory River was reached, after another 20 miles, through open

forest for the first few miles, then plain country for the rest of the way. The river here was a fine running stream 20 feet wide and 8 feet deep, with water as clear as crystal. Some of the holes along the river were a mile in length and 50 feet in depth. Pandanus and cabbage-tree palms grew at the water's edge, and the banks were clothed with river gum, coolibah, tea-tree, pear-tree, fig, and Leichhardt pine. *Pacilodryas cerviniventris*, *Geopelia humeralis*, *Chlamydera nuchalis*, and *Alcyon pulchra* were recognized here.

The Gregory River was followed down to where it divides into two channels, about 28 miles from Burketown. These channels are known as the Gregory River proper and the Brook. Burketown was reached near the end of the month, and boat taken to Thursday Island, whence Mr. M'Lennan proceeded to Cape York, remaining at Somerset until joined by myself and Dr. Dobbyn, after our departure making his headquarters at Paira, the picturesque home of Mr. and Mrs. Bert Vidgen, whence he explored the country in all directions. In June and July, 1911, in company with Mr. Vidgen, he visited nearly all the country between Cape York and Raine Island and on to Bramble Cay, in Torres Strait.

Dromaius novæ-hollandiæ. Emu.—Noted on several occasions on the plains that border the Cloncurry River and elsewhere in the Gulf country, and also at Lockerbie, Cape York. Numerous near Batavia and Ducie Rivers.

Megapodius tumulus. Scrub-Fowl.—This species was frequently met with in the scrubs at Cape York. When disturbed they run off through the scrub and then fly on to a horizontal limb of some tree whence they can get a good view. They are seldom heard calling during the day, but keep it up all night, and seem to be largely nocturnal in their habits.

Their mounds are often very large. The first one examined, on the 23rd December, 1910, measured 20 feet across the base, 10 feet across the top, and was 15 feet in height; it contained eleven eggs. The birds early in the season scratch holes or pipes down into the mounds, which have become consolidated since the previous season; these pipes go down from 3 to 5 feet from the surface. As soon as the first rains come fresh mould is scratched into the holes.

In this particular mound two holes contained two eggs, near the bottom and within a few inches of one another. This mound, examined again on the 1st February, 1911, was found to contain six eggs and two young birds just making their way out of the mound; they were about 3 feet from the surface. Mr. M'Lennan remarks:—"I put one on the surface of the mound, and it flew away as soon as I took my hand off it. The other was converted into a skin. It had a thick layer of fat beneath the skin, no doubt to nourish it until it was able to find sufficient food for its needs." The irides were greyish-brown, bill light brown, legs a rich yellow washed with olive. In the adult the irides are rich brown, bill brown, legs rich orange-yellow. No definite arrangement is adhered to in the placing of the eggs in the mound. Never more than two birds were noted at any one mound. Old mounds were seen on all the scrub-covered islands in Torres Strait, but no birds.

Another mound, examined first on the 16th January, 1912,

measured 30 feet in diameter at the base, 15 feet across the top, and was 15 feet in height. The eggs, eight in number, were from 3 to 5 feet from the surface, one only in each pipe; two were placed vertically, the rest in a slanting position. This mound was again examined on the 27th February, 1912; it again contained eight eggs, and two birds were noted at the mound. On the 27th March, 1912, it had been built up again, but contained only one egg. Two distinct types of egg were obtained from this mound, as though laid by different birds. These birds feed mostly on insects and snails.

Catheturus purpureicollis. Barnard Brush-Turkey. — They are common in the Cape York scrubs, as are also their nesting-mounds. These mounds are very much preyed upon by wild pigs and "goannas," and great numbers of the eggs are in this way destroyed, imposing a serious check on the natural increase of the bird. The pig has been introduced by the white man, who is responsible for the disappearance of the natural enemies of the lizard—the black-fellow and the dingo.

Mr. McLennan states:—"Several birds lay in one mound. I have taken four distinct types of egg from the same mound. During the breeding season, which commences with the advent of the first rains, the wattle of the male becomes very much elongated; it almost touches the ground, being about 6 to 8 inches in length. I saw two males chasing a female at the beginning of the season in 1910, and have occasionally seen one male chasing another male, and when this occurs they appear to be quite blind with fury, and run into logs or the butts of trees. The call of the male is a loud grunting 'Oom,' and one can always call them up by imitating it. I have seen as many as seven feeding together before the breeding season. They roost at night high up in the trees, those chosen being often just outside the scrub or big trees in the scrub. They feed on the ground, in the scrub mostly, but often in the open forest or at the edge of the mangroves, sometimes feeding on fruit trees in scrub. The nesting-mound is more loosely built than that of the Megapode, and its temperature is regulated by heaping it up to keep the moisture in when the weather is dry, or scratching it off to within a few inches of the eggs when it is wet.

"6th March, 1912.—Dug out a mound near Lockerbie. It contained one young bird, not long hatched, as it had only worked up 3 inches from the shell. All the wing feathers were encased in sheaths, and the bird was very weak in the legs. I put it in a box when I reached the house, as I wanted to see how long it would take to get rid of the sheathing on the wings. When found in the mound it was in a circular chamber, and seemed to be resting in it, as the floor was padded down hard. It was about 2 feet from the surface, and would probably have remained there until it got rid of the sheathing from its feathers and got strong on its legs. The 2 feet of soil above it was quite loose.

"I had a look at the young Turkey as soon as I got up next morning; it was busily engaged in stripping the sheathing from its feathers. At 1 p.m. it had all the sheathing off and was quite strong on its legs, so I took it into the scrub and let it go; it ran a few feet, and then started to scratch and pick amongst the dead leaves and mould. When I moved it darted away, and was soon out of sight.

"The largest number of eggs found in one mound was on 23rd February, 1912; this, a large mound, 12 feet by 14 feet long and

2 feet 6 inches in height, contained nineteen eggs, four freshly broken shells, six shells that the young had been hatched from, and one rotten egg. A young bird not long out of the mound measured in the flesh $6\frac{3}{4}$ inches from tip of bill to tip of tail, $9\frac{1}{2}$ inches from bill to toes. The irides were light brown, bill black, legs dark olive-brown. The stomach contained small wild fruits."

Synoicus cervinus. Northern Brown Quail.—These Quails were met with in the Gulf country and at Cape York. There does not seem to be any marked difference between those from either of these two localities and birds in my aviary at Broken Hill. They land in numbers on Booby Island, in Torres Strait, in the spring, on their way over from Papua, and are often caught on the pearling vessels in the Strait.

Turnix melanotus. Red-backed Quail.—When burning off the coarse grass at Paira, Cape York, after dark, the fire disturbed two of these birds, and one was caught. ♀, length in flesh, $5\frac{1}{2}$ inches; iris silvery-yellow; upper mandible blackish-brown; terminal half of lower mandible pale brown, basal half yellow; gape yellow; legs pale yellow. They are occasionally flushed in the open forest after the grass begins to grow on the burnt ground.

Ptilinopus swainsoni. Red-crowned Fruit-Pigeon.—Occasional at Cape York; one skin sent down.

Ptilinopus ewingi. Rose-crowned Fruit Pigeon.—Common at Cape York, frequenting the scrubs, open forest, and mangroves. In the mangroves it usually nests, choosing a horizontal fork 3 or 4 feet above high-water mark on which to place its frail, stick-built nest and single egg. In the male the irides are orange, bill pale green, legs pale green; and the stomach contents were usually wild fruits. The earliest nest noted was found on the 29th August, 1911, and the latest on 15th December. After Mr. M'Lennan left, during the summer of 1912-13, both these species were much more plentiful at Cape York.

Lamprotreron superba. Purple-crowned Fruit-Pigeon. — This beautiful Pigeon is fairly common at Cape York, and is nearly always found in the scrub, occasionally venturing out into the open forest, near the edge, and here it will sometimes nest, but more often in the scrub itself. The nest, a loosely-built structure of fine twigs, is usually placed low down in a horizontal fork. The bird is very shy, and soon gets out of one's sight in the thick scrub. It feeds on fruit, and its note consists of a succession of "Ooms," repeated slowly. The earliest nest was found on 5th November, and the latest on 2nd February.

Megaloprepia assimilis. Allied Fruit-Pigeon. — This fine and brilliantly-coloured Pigeon is a common object at Cape York, nesting in the scrub or in open forest at its edge. From its usual note it is locally known as the Bel-be-coo. The nest, a frail structure even to hold the single egg, is usually placed in a slender horizontal fork. The earliest nest noted was on 28th August, and the latest on 3rd February. The iris is orange, the bill pinkish-red tipped with yellowish-green, and legs pale olive-green.

Myristicivora spilorrhoa. Nutmeg-Pigeon.—This Pigeon is regarded all along the north-east coast of Northern Queensland as the principal game bird, and is very much esteemed as an article of diet. It is

consequently shot freely for the table, but, fortunately for the bird, the so-called sportsman who goes in for record bags has not extended his depredations to these parts as yet.

In the flesh an average bird measures 11 inches in length, the iris is dark brown, the bill yellow tinged with green, legs and feet pale greenish-blue. The stomach contents consist invariably of wild fruit, for which they have an immense capacity. The lower mandible is very distensible, and large sections of banana are easily swallowed. A young bird brought from Torres Strait by Dr. Dobbyn lived in Broken Hill for 10 months, and died only of neglect in its owner's absence from home. This bird's migration from Papua occurs in early spring. On the 16th August, 1911, Mr. M'Lennan saw two large flocks flying past Lockerbie and heading south-east, about sunset. On the 3rd September, 1911, these birds were flying south all day in large flocks.

The earliest nest recorded was found on the 4th September, and the latest on the 15th January.

Lopholaimus minor. Little Topknot Pigeon.—On the 16th May, 1911, when camped 28 miles from Peak Point, and near the Jardine River, Mr. M'Lennan saw three of these Pigeons. Next day he saw a large flock of them, flying south. Mr. Vidgen, of Paira, a few days previously, saw two flocks flying overhead, coming from across the Strait and going south. He states that none had passed over for seven or eight years, and ten years again previously to that, so that we can regard the bird as only an occasional visitor from New Guinea. The colouring of the soft parts of two males are as follows:—Iris, outer circle crimson, front of inner circle brown, rest yellow; upper mandible fleshy-brown, lower mandible pinkish-red, legs reddish-brown.

Geopelia humeralis. Barred-shouldered Dove.—In the Gulf country this species was not noted until the Gregory River was reached, and became more numerous nearer the coast. It was a common bird at Cape York, feeding usually on the ground in the open pockets, and resorting to the mangroves for nesting purposes. It is also found on nearly all the islands off the coast. Nests were noted in January, February, May, September, October, and November.

Geopelia tranquilla. Ground-Dove.—Mr. M'Lennan found a nest at his first camp on the Cloncurry River on 8th February. They were plentiful along all the rivers running into the Gulf. Nests were noted on 1st March, 17th April, 10th June, 30th June, and 2nd July. At Cape York they were numerous during February, March, and April.

Geopelia cuneata. Diamond Dove.—Numerous along the Cloncurry and other rivers in the "Gulf." One nest was found, on 26th June, 1910, on the Leichhardt River, built in a bauhinia tree; it contained two young birds. Also noted at Cape York, but not numerous.

Chalcophaps chrysochlora. Little Green-Pigeon.—This bird was more plentiful at Cape York during 1912 than previously. It is a ground feeder on fallen fruits. In the flesh this species measures about 10 inches in length, the iris is dark brown, the bill pink with a bluish tinge at the base, legs reddish-pink with a whitish stripe down the back.

Phaps chalcoptera. Bronze winged Pigeon.—One of these birds

was shot at Peak Point, the Cape York telegraph station, on 21st February, 1912, the only time that the species was noted.

Histriophaps histrionica. Flock-Pigeon.—Only a few small flocks were noted during Mr M'Lennan's travels in the Gulf country. In early days, as I myself witnessed, they occurred here in countless thousands, feeding on the Mitchell grass downs during the day and coming in to water in the evening in an unbroken succession of immense flocks. They breed on the ground, so that the stocking of the country with herds of cattle and sheep has seriously interfered with their nesting operations and feeding habits.

Ocyphaps lophotes. Crested Pigeon.—Common throughout the Gulf country, but not seen at Cape York.

Hypotaenidia philippensis. Pectoral Rail.—None noted in Gulf country, but numerous on islands in Torres Strait and all the way to Raine Island. Here they caused Mr. M'Lennan some annoyance by frequenting the caves resorted to by the Tropic-Birds for nesting purposes and dashing out in his face when he was crawling in. Not seen on the mainland.

Rallina tricolor. Red-necked Rail.—The first bird was noted early in January, 1911. On the 21st January another was seen, with young ones not more than a week old; these were covered with black down. They were noted again at the beginning of the following wet season, on 11th December, 1911. After this they could be heard calling almost every night, the call being a loud, shrill "Kare, kare, kare," many times and rapidly repeated, and sometimes a short, sharp "Tock, tock, tock," which would be kept up for half an hour at a time. They always frequented the scrubs, whether along the creeks or on the ridges. Mr. Vidgen's little boy found a nest in the scrub not far from the house, and watched the birds come to it; he took Mr. M'Lennan to see it. The nest was simply a depression in the dead leaves at the foot of a tree, and contained three white eggs; it was left until the 9th March, when the eggs were found to have been taken, probably by a "goanna." Charlie, a South Sea Islander working for Mr. Jardine, found another nest, near Somerset, containing four white eggs. He did not take them, and when it was visited ten days later the nest contained only one egg. This he brought to Mr. M'Lennan; it had a half-developed chick in it. Although a thorough search was made of a patch of scrub near the house in which five or six could be heard calling every night, they were seldom seen during the daytime, and no more nests were found. Their calling was last noted early in April, 1912.

The colouring of the soft parts in specimens obtained was as follows:—Iris orange-scarlet, bill light green, legs dark olive. The stomach contents were usually the remains of land-snails. Another nest, containing five fresh eggs, was found by Mr. Vidgen's boy during the past season.

Poliolimnas leucophrys. White-browed Crake.—One was flushed from a clump of rushes in a tea-tree swamp behind Charo mangroves; it flew to the top of a tea-tree, and was secured as a specimen. ♀, length in flesh 7 inches, irides dark scarlet, eyelids scarlet, bill dull olive-yellow. Stomach contained beetles and other insect remains.

Amaurornis ruficrissa. Rufous-tailed Rail.—First seen when in company with Mr. Barnard, in 1910. Not noted in numbers at Cape

York until 21st January, 1912, when one was heard calling in the rubber garden at Paira, and afterwards seen. Two days later several were heard at Lockerbie. After this they were heard almost nightly, their calling being kept up until about 7 a.m., when it ceased, to recommence after sundown. All search for a nest proved unsuccessful until the end of March. The birds usually frequented long grass 3 to 5 feet in height, very dense, with reeds 7 to 9 feet and pandanus up to 15 feet, all growing together, so that searching was a very difficult matter. One bird was located in a small paddock where wild mint grew thickly and to 6 feet in height, and on the 1st April, 1912, Mr. McLennan made a thorough search of this. His note is as follows:—"I went down to the Bull Paddock, to where I heard the Moor-Hens calling last night, and began my search. To start with, I parted a strip 25 to 30 feet long and about 10 feet from where the bird was calling, and worked to and fro along the line till a patch of about 30 by 30 feet had been completed. After a rest the search was recommenced, and the nest found; it contained three fresh eggs. No birds had been seen, so I cut a narrow track from the nest to a spot about 12 feet away, and sat there and waited for the bird to return. I waited for nearly five hours, but no bird returned, though I heard the call once about 20 feet away. After this I went away, and paid three surprise visits to the nest, but did not see the bird. I returned at sundown and sat in the old spot, and had not been there long when I heard the birds calling about 50 yards away; they appeared to be heading for the nest. Soon I saw the tips of the mint shaking near the nest, and at last the bird hopped on to it."

The nest was 4 inches from the ground, placed amongst stalks of wild mint 3 feet high; it was roughly constructed of pieces of dry and green mint and dry twigs of *syndratura*, the twigs and pieces of mint being about 4 inches long. It was 9 inches across by 5 inches in depth externally; egg chamber, $4\frac{1}{2}$ inches in diameter by $2\frac{1}{2}$ inches deep. The eggs measured, in millimetres, 35×25 , 35×25 , 38×25 , and were of a white ground colour spotted with dull red and purplish markings. Such eggs have been sent for many years past from various parts of the Cape York Peninsula as the eggs of the Red-necked Rail.

An average male bird measured in the flesh 11 inches from tip of bill to tail, and $15\frac{1}{2}$ inches to tip of toes. Irides rich brown; bill green, with base of culmen orange-yellow; legs olive-yellow. Stomach contents, portions of beetles and greenstuff. A female measured from bill to tail $9\frac{3}{8}$ inches, from bill to toes $13\frac{3}{4}$ inches; irides rich brown; upper mandible olive-brown, base of culmen tinged with orange, cutting edge from nostrils to gape yellowish-green; lower mandible, terminal half olive-brown merging into yellowish-olive. Stomach contents, grass seeds and beetle remains.

Tribonyx ventralis. Black-tailed Native-Hen.—Plentiful on the rivers and swamps of "Gulf," but not noted at Cape York.

Porphyrio melanonotus. Bald-Coot.—Many seen in Gulf country, and also at Cape York.

Fulica australis. Coot.—Common on the waters of the Gulf country.

Podiceps poliocephalus. Hoary-headed Grebe.—Noted occasionally at Cape York, and numerous in the Gulf waters.

Puffinus sphenor. Wedge-tailed Petrel.—This species, which I

found in its burrows on Raine Island in October, Mr. M'Lennan also found at home in its burrows when at Raine Island in July, 1911. He obtained several skins, and noted that each burrow contained two birds. He visited the burrows after dark, and waited for some time, and saw only one bird leave, but could hear mournful calling in all directions. A male and female in each burrow.

♀, ovary normal; length, $16\frac{3}{4}$ inches; iris dark brown; horny tip of bill dark brown, nostrils dark brown, rest of bill brownish-grey; legs and feet fleshy-white with brown markings. Stomach empty.

♂, testes enlarged; length, $16\frac{3}{4}$ inches; iris and other parts coloured as in female. Stomach contained green slime.

Hydrochelidon fluviatilis. Marsh Tern.—A small flock noted at Sedan, on the Cloncurry River, on 12th February, 1910, and numbers over a big lake in the same locality on 1st March, 1910. They were again seen over the Big Dalgonally Lake, at Byromine, on the same river, on the 4th of April. At Cape York they were hovering over Lake Sanamere, 3 miles from the Jardine River. Mr. M'Lennan remarks that this lake has more than its share of crocodiles, and that no living thing swims on its surface.

Gelochelidon macrotarsa. Gull-billed Tern.—On 12th February, 1910, Mr. M'Lennan notes:—"A few Gull-billed Terns passed up the river to-day." Another flock was seen flying south on the 13th. A pair was flying over the Big Dalgonally Lake on the 31st March, 1910. Not noted at Cape York.

Sterna gracilis. Graceful Tern.—This beautiful Tern nests annually on the top of Bushy Island, Torres Strait, in October. It was seen on the Macarthur Islands. Hundreds of dead and dried bodies of this species, all young birds, were found on a vegetated sand-bank off the Coburn Reef on 17th July, 1911, possibly killed by the hurricane which visited the coast of Queensland some months previously, as I have a note from Mr. Olive, of Cooktown, that thousands of dead Terns and other sea-birds were to be found along the beach between that town and Port Douglas after that hurricane.

On an exposed coral ridge off Cairncross Island an old nesting-place was found, and a few of the birds were seen hovering over the reef.

Sterna media. Lesser Crested Tern.—Upon visiting the Upolu Bank, Cairns, on 19th November, 1909, Mr. M'Lennan found the whole surface covered with this species, in company with *Anous stolidus*, all starting to prepare their nests. On the 14th December, 1909, a small colony was found tending young on Oyster Cay, Cairns. All eggs had hatched. There were three other species nesting on the same islet—*A. stolidus*, *Sterna cristata*, and *Onychoprion fuliginosa*. Not noted on any of the islands near Cape York.

Sterna cristata. Crested Tern.—On visiting Oyster Cay, Cairns, on the 14th December, 1909, three colonies were found, all sitting on eggs. On 11th November, 1910, this species was breeding freely on Mid Rock, Torres Strait. At Raine Island, on 9th July, 1911, a small colony was found in the centre of the island. The Gulls had been levying a heavy toll on them. On 27th July, 1911, great numbers were noted on Bramble Cay, but no young or eggs, although a few birds were flying about with fish in their bills. They have a long, sweeping action of the wings, and often go up in company in a spiral flight, and the higher they go the larger they

appear to be, and when descending they sweep down, passing and re-passing one another on the way.

Sterna melanauchen. Black-naped Tern.—A common bird on the reefs and islands about Cape York. It nests in October and November on Bushy Island, Torres Strait, and also in lesser numbers on Kypenny Island, 2 miles from Somerset. Also noted, but not breeding, in July, 1911, on the Macarthur and Bird Islands.

Onychoprion anæsthetæ. Bridled Tern.—This graceful species is often seen in the vicinity of Torres Strait. It breeds under the shelving rocks of Bushy Island, fresh eggs being found early in October and November. On Channel Rock, Torres Strait, this was the only species found breeding, fully fledged young being noted on the 10th November.

Onychoprion fuliginosa. Sooty Tern.—Found nesting in numbers on Oyster Cay, Cairns, on 14th December, 1909. At Raine Island, in July, 1911, they were nesting in tens of thousands all over the island. On the 27th July, 1911, great numbers were also noted on Bramble Cay, and two small colonies of fledged young. To show the variation in size, before skinning one bird measured in length $15\frac{1}{2}$ inches and the other 17 inches; both were males.

Anous stolidus. Noddy.—Several flocks seen on the Bird Islands in July, 1911, and in the same month they were nesting all over Raine Island. An old nesting-site was found on a sand-bank 6 miles east of the Bird Islands. At Bramble Cay they were also very numerous.

Anous leucocapillus. White-capped Noddy.—There is a nesting-place of this Tern on an island near Darnley Island, in Torres Strait, the nests being placed on the trees. This was described to Mr. M'Lennan, but not visited by him. A dead specimen was found on the Bird Islands.

Larus novæ-hollandiæ. Silver Gull.—This Gull is a common object on all the northern islands. A few were found nesting on Tuesday Rock, Torres Strait, on 21st June, 1911. On the Macarthur Islands a few were breeding on 1st July, 1911. On the Bird Islands, on the same date, a small colony was found breeding. Most of the nests contained young about 14 days old. On the return journey, 17 days later, fresh nests were found on the Bird Islands, on a small grassy patch. Old nests from which the young had gone were noted on a small rocky islet near Peak Point.

Hæmatopus longirostris. Pied Oyster-catcher.—This species is tolerably common on the islands near Cape York. Two nests were found on an exposed coral ridge of the Macarthur Islands on the 18th July, 1911; another on the 19th on the second island of the Hannibal group—this was also on a coral ridge, amongst stunted trees; and again one similarly situated on Cairncross Island.

Hæmatopus fuliginosus. Black Oyster-catcher.—The Black Oyster-catcher is also common on these islands. Noted on Bushy, Cairncross, the Hannibals, Macarthur, and Bird Islands. On one of the Bird Islands a nest was found amongst a dense bushy growth on a coral ridge, and one on a second island of the same group. On the second island of the Hannibals a nest was placed amongst a thick growth of stunted trees on a coral ridge, and again on the second island of the Cairncross group.

Erythrogonys einetus. Red-kneed Dottrel.—Found at Sedan, on the Cloncurry River, frequenting the shores of a swamp.

Lobivanellus personatus. Masked Plover.—Very common throughout the Gulf country, on the swampy areas. Also noted on a swamp at Peak Point, Cape York. Their habits are much the same as those of the southern species.

Charadrius fulvus. Lesser Golden Plover.—A common bird along the Cape York Peninsula in the summer months, both on the islands and mainland, frequenting mud-flats, swamps, and open grassy spaces.

Ochthodromus geoffroyi. Large Sand-Dottrel.—At Cape York specimens were obtained at Paira beach on 21st March, 1911, and at Charo beach on 14th January, 1911. They were feeding in large numbers on the crabs and shell-fish with which such places abound. The soft parts were alike in colouring in the two sexes—irides rich dark brown, bill slaty, legs pale yellowish-brown, feet black.

Ægialitis ruficapilla. Red-capped Dottrel.—Noted at Cape York and Cape Grenville, on sea beach.

Ægialitis nigrifrons. Black-fronted Dottrel.—Several noted on bed of Cloncurry River and on the Leichhardt.

Himantopus leucocephalus. White-headed Stilt.—This Stilt was fairly numerous in the Gulf country, frequenting the shores of lakes and swamps.

Numenius cyanopus. Curlew.—On the 30th June, 1911, Mr. McLennan found this bird numerous on Bushy Island, near Cairncross, and throughout the summer months it is a common object on all the mud-flats and tidal beaches.

Numenius uropygialis. Whimbrel.—Noted in company with the Curlew on Bushy Island on 30th June, and common throughout the summer.

Mesoscolopax minutus. Little Whimbrel.—Seen at Cape York on several occasions, feeding on the beaches and mud-flats, in company with other waders.

Limosa uropygialis. Barred-rumped Godwit.—Specimens of this wanderer were secured on Charo beach and also noted on the swamp at Peak Point, in the summer.

Totanus (Heteractitis) brevipes. Grey-rumped Sandpiper.—Two skins of this species were obtained at Cape York. ♂, length $9\frac{5}{8}$ inches; iris dark brown; bill, terminal half blackish-brown, basal half pale olive; legs yellow with greenish tinge. ♀, length $9\frac{1}{2}$ inches; soft parts as in male.

Glottis nebularius. Greenshank.—Noted on several occasions in summer months at Cape York. In a typical specimen the soft parts were as follows:—♀, length from tip of bill to tail, 13 inches, to toes $15\frac{1}{4}$ inches; irides brown; bill, terminal half black, basal half pale slate.

Pisobia acuminata. Sharp-tailed Stint.—Many seen during the summer on the swamps and lakes of the Gulf country.

Glareola grallaria. Pratincole.—Noted on 24th December, 1909, near Hughenden, on the Flinders River, and also in the Cloncurry River district, near the town, on 21st April, 1910.

Edicnemus grallarius. Southern Stone-Curlew.—Common in the Gulf country, and heard and seen occasionally at Cape York. On one moonlight night at Lockerbie three were calling and dancing a few feet away from the door of the hut. While the loud, shrill, and sustained call was being uttered the wings were outspread, the birds faced each other and kept up a rapid stamping of the feet.

Esacus magnirostris. Long-billed Stone-Curlew.—One or more specimens found on most of the islands visited between Cape York and Raine Island. On 18th July a nest was found on one of the Macarthur Islands; it was a mere depression in sand on a coral ridge amongst a dense growth of bushes; it contained one egg. The birds are very shy, and seldom admit of a close approach, even on the most unfrequented islands.

Choriotis (Eupodotis) australis. Bustard (Wild Turkey).—Tolerably plentiful throughout the Gulf country, flocks of from 5 to 50 being frequently seen. They also occur on the Cape York Peninsula, having been noted in numbers, and an egg obtained, during the past season, near the Batavia River, by Mr Wheatley, of Peak Point.

Antigone australasiana. Crane (Native Companion).—These fine birds were noted on several occasions in the Gulf country, one nest being found with fresh eggs on 26th March, 1910. Only one was seen at Cape York, but on the way from Croydon to Cairns Mr. McLennan counted over 200 of these graceful birds on a swamp near the coach route, and a little later—it was towards evening—this number would have been considerably augmented, as the birds kept flying in from all quarters in flocks of from seven to eight or more. He estimated that by nightfall there would probably be over a thousand birds on the swamp.

Ibis molucca. White Ibis.—Found both on the Gulf waters and at Cape York.

Carpibis spinicollis. Straw-necked Ibis.—A few seen early in September, 1911, at Gheedinia Lagoon, Cape York.

Plegadis falcinellus. Glossy Ibis.—Numerous on the swamps along the Cloncurry River during February, March, and April, 1910.

Platalea regia. Black-billed Spoonbill.—On the Cloncurry River early in February, 1910, a large flock of these birds was seen. There were also many on the swamps and lakes at Sedan, on the same river. Later, large flocks were noted in the same locality, and later again, in July, 1910, on the Leichhardt River. They were also seen on the lagoons at Cape York.

Platibis flavipes. Yellow-billed Spoonbill.—Several met with on the Leichhardt River, and a nest containing two small young birds was found early in July, 1910. They were noted on several occasions at Cape York.

Xenorhynchus asiaticus. Black-necked Stork (Jabiru).—These birds were seen on several occasions on the different rivers of the Gulf of Carpentaria, and on the Leichhardt River, 25 miles beyond Caloola Station, a nest was found on the 16th June, 1910, in a large gum about 200 yards from the bank. Mr. McLennan states:—"The nest, which was about 55 feet from the ground in a big river gum, was loosely built of sticks and twigs, lined with tufts of grass and the paper-like bark of the tea-tree. It was about 5 feet across by 3 feet in depth, and contained one young bird, which was about 3 feet 6 inches

high when standing, and had a spread of wing of nearly 5 feet. The wing and tail feathers were grey and white, breast well feathered and white; back well feathered, greyish-brown in colour; neck covered with greyish-brown down; bill blackish, irides brown, legs and feet faint greyish-pink. The young bird was annoyed at being disturbed, and made a loud clacking noise with its bill, occasionally emitting a deep guttural grunt and making vicious drives at me, none of which reached me, as I had previously tried the power of its bill on a stick, and did not like the impression it made."

This species was occasionally seen at Cape York.

***Ardea sumatrana*.** Great-billed Heron. — First noted at Cape Grenville, flying over the mangroves, on 4th July, 1911. Another specimen was seen several times on Charo beach or flying towards Charo Swamp, in February, 1912. On 28th February, 1912, Mr. McLennan writes:—"Went to Charo Bay and rowed up channel or creek in mangroves. Found a nest of *Ardea sumatrana*, with a fully fledged young one sitting on a limb close by. I climbed to the nest to get a closer look at both it and the young bird. The latter calmly walked out to the end of the limb, and stood watching me, and did not show any sign of fear. Height, about 3 feet; irides silvery-cream colour, bill dull leaden-blue, legs dull leaden-blue with patches of creamy-yellow; head, neck, and under surface rufous-brown, under tail coverts and flanks of a lighter shade; back, wing coverts, and upper tail coverts dark brown with a rich rufous-brown edging to each feather; primaries and rectrices dark slate.

The nest was placed in a horizontal fork of a mangrove overhanging the channel, 2 feet from the surface of the water. It was composed of dead mangrove sticks and twigs, and measured over all 3 feet long, 2 feet 6 inches wide, and 1 foot thick in the centre. A pair of fresh eggs was taken from this nest in the past season by Mr. Vidgen's son.

***Herodias syrmatorphorus (timoriensis)*.** Egret. — Frequently observed, both in the Gulf country and at Cape York.

***Notophoxyx novæ-hollandiæ*.** White-fronted Heron. — Commonly met with on all the waters of the Gulf. Found nesting in March, 1910, out from the Cloncurry River, on the trees fringing several billabongs on the plains. Seen on several occasions at Cape York.

***Notophoxyx pacifica*.** White-necked Heron. — Noted on several occasions in the Gulf country and at Cape York.

***Notophoxyx flavirostris*.** Pied Egret. — This bird was first met with, and a specimen secured, on Gheedinia Lagoon, Cape York, on 14th November, 1911. It proved to be a female. In February, 1912, four were seen in the middle of a shallow salt-water swamp between Peak Point and Cape York. One fine male, in full breeding plumage, was secured. All efforts to find their nesting-place in the miles of mangrove and tea-tree swamp were, however, fruitless, though they must have been nesting somewhere in the neighbourhood.

***Garzetta nigripes*.** — Noted on the Leichhardt River.

***Demigretta sacra*.** Reef-Heron. — The Reef-Heron nests near Somerset, on Kypenny Rock and Bushy Island. On 27th February, 1911, Mr. McLennan flushed a white bird from a nest on Bushy Island, with a grey bird close to the nest. On 1st March, 1911, in company with Mr. Chum Jardine, he visited Kypenny and found seven nests of the Reef-Heron containing either eggs or young birds. He had

previously visited this rock in October and found several pairs nesting then. A nest containing two young birds was found on Cairncross Island on 30th June, and dozens of old nests. On the Hannibal Islands on 1st July, 1911, dozens of old nests were seen, and the birds were in hundreds—nearly all white birds, only a few odd grey ones amongst them. On the Macarthur Islands, on 30th July, 1911, a Reef-Heron's nest containing two young was found in some bushes on a coral ridge, and another containing two hard-set eggs.

Only one Reef-Heron was seen on Raine Island.

Nycticorax caledonicus. Nankeen Night-Heron.—Numerous along the Cloncurry and Leichhardt Rivers, flocks of from 15 to 20 or more being frequently flushed from the tea-tree. On the Macarthur Islands, near Cape York, several were noted, and there were many on Raine Island. On the 15th July, 1911, Mr. M'Lennan notes, when camped on Raine Island:—"Two young Nankeen Herons strolled round to the camp to-day, and made themselves quite at home. They could not fly, and the down was adhering to their feathers, so they must have been bred on the island. I did not notice any nests."

These birds were numerous on Cairncross Island. At Gheedinia Lagoon, Cape York, several immature birds were seen. They were also noted on the Norman River.

Butorides stagnatilis. Little Mangrove-Bittern.—One nest was found on Kypenny in October. On the Bird Islands these Bitterns were numerous on the 2nd July, 1911, and many of last season's nests were observed. There were also many of these birds at Cape Grenville. One nest was found on the Bird Islands on the 18th July, 1911, containing two addled eggs.

Dupetor gouldi. Yellow-necked Mangrove-Bittern.—This Bittern is often met with in the swamps at Cape York, where it breeds in the mangroves. The nest is usually a rough platform of sticks about 9 inches in diameter and about 1½ inches thick, placed in a horizontal fork of a mangrove.

On the 29th February, 1911, Mr. M'Lennan writes:—"I went over to the tea-tree and mangrove swamp behind Mud Bay, and found another Bittern's (*D. gouldi*) nest. The nest was built in a mangrove overhanging the creek and about 15 feet from the water. When I was climbing to the nest I put my hand on a carpet snake about 8 feet long; it was coiled up in a fork of the tree. I suppose it was waiting till night to grab the bird on its eggs." In an adult male taken on the 18th February, 1911, the soft parts are as follows:—Irides silvery-brown, bill blackish-brown, legs dark olive-brown. Stomach contained fish and portions of crayfish; two of the fish were 5 inches in length.

Chenopsis atrata. Black Swan.—Two were noted on the Big Dalgonally Lake at Byromine, on the Cloncurry River. These birds are rarities in the Gulf country.

Anseranas melanoleuca. Pied Goose.—In March and April, 1910, Mr. M'Lennan found many of these birds on the lakes on Sedan and Byromine, on the Cloncurry River, where they were nesting on the lignum. The nests contained from six to eleven eggs. A large flock was also met with on a chain of lagoons near the Leichhardt River.

Nettapus pulchellus. Green Pigmy-Goose.—This beautiful little Goose was found breeding at Byromine, one nesting hollow containing as many as eleven eggs. The birds were also noted at Cape York.

Chlamydochen jubata. Maned Goose (Wood-Duck).—Plentiful on the waters of the Gulf, and nesting in March, 1910, at the end of the wet season.

Dendrocygna arcuata. Whistling-Duck.—Numerous at Sedan and Byromine. On the 30th March, 1910, "a Whistling-Duck with seven small young ones was noted on one of the Byromine lakes."

Dendrocygna eytoni. Plumed Whistling-Duck.—Great numbers were observed on all the lakes and swamps about the Cloncurry River, flocks of 200 or 300 being common. They nest out on the plain, in the grass, 3 or 4 miles from water, laying as many as ten or eleven eggs. Also noted at Cape York.

Tadorna rufigerum. White-headed Shieldrake.—Only one seen, and that on the beach, Charo Bay, Cape York.

Anas superciliosa. Black Duck.—This species was met with in great numbers at Byromine and Sedan, on the Cloncurry River, where the birds were nesting freely in the hollows of the trees in and about the lakes. One nest was found in the grass at the foot of a tree. The nests contained from eight to ten eggs. At the end of March, when they were found, most of them contained hard-set eggs. This Duck was also common at Cape York, where conditions favoured their habits.

Nettion gibberifrons. Grey Teal.—This Duck was very numerous on the lakes at Sedan and Byromine, and nesting freely in the hollow trees. The nests contained from five to twelve eggs, the average clutch being seven or eight. Eggs were nearly all hard-set at the end of March, 1910.

Malacorhynchus membranaceus. Pink-eared Duck.—Found in great numbers on the Cloncurry River lakes and swamps, and were nesting at the end of March.

Nyroca australis. White-eyed Duck.—Numerous on the waters of the Gulf of Carpentaria. They were nesting in the hollow trees round the lakes at Byromine. They were also met with all the way down the Leichhardt River.

Phalacrocorax carbo. Black Cormorant.—At Sedan, on the Cloncurry River, a flock of this species was noted on a billabong.

Phalacrocorax sulcirostris. Little Black Cormorant.—At Byromine this species was nesting on the gutta-percha trees in the Big Dalgonally Lake, in company with *P. melanoleucus* and *Plotus novaehollandiae*. One tree contained 13 nests, another 27. The clutches varied from three to six eggs, and many nests contained young birds. The species was also seen on the Leichhardt.

Phalacrocorax melanoleucus. Little Pied Cormorant.—Writing from Byromine, Mr. M'Lennan notes on 29th March, 1910 :—"Rode to a small lake across the river, about 3 miles from the station. Found a Black-and-White Cormorants' rookery of 66 nests, built in four trees out in the lake, with clutches of three, four, and five eggs or young in each nest." On 31st March, 1910 :—"Rode to the top end of the Big Dalgonally Lake. Black-and-White Cormorants were nesting in some gutta-percha trees in the lake. One tree contained four nests, another six, a third seventeen Cormorants' and three Darters' nests, a fourth three Cormorants' and one Darter's, a fifth thirty-nine nests."

On the 15th July, 1910, writing from beyond the Leichhardt River,

he notes :—" After leaving the Leichhardt I camped at a little water-hole about 7 miles from the river, on the Gregory track. It was about a mile long and from 30 to 100 yards wide, dotted with small islands thickly covered with tea-tree. There were numbers of blue and white water-lilies growing about the edge of the water-hole. After lunch I went for a walk round the water-hole, and saw an old Cormorants' rookery (*P. melanoleucus*) in the tea-tree on an island. I counted 30 nests." This species was also noted at Cape York.

Plotus novæ-hollandiæ. Darter.—Found breeding in company with *P. sulcirostris* and *P. melanoleucus* at Byromine. No. 1 tree contained one Darter's nest, containing four eggs; No. 2 tree, one containing four eggs; No. 3 tree, three nests, two with four young and one with five; No. 4 tree, one nest with four eggs; No. 5 tree, four nests, all with young birds. Noted the old birds disgorging food into the mouths of the young. This species was also found at Cape York.

Sula cyanops. Masked Gannet.—At the time of Mr. M'Lennan's visit to Raine Island, on 10th July, 1911, a few of these Gannets had selected nesting-sites, but none had laid. One egg was laid before he left on the 15th July.

Sula piscatrix. Red-legged Gannet.—Mr. M'Lennan found, on the 10th July, 1911, several nests with one egg in each and a few with one young bird. Great numbers of the birds were building.

Sula fusca (sula). Brown Gannet (Booby).—Mr. M'Lennan visited Raine Island early in July, 1911, and found this Gannet scattered all over the island, but only eight nests contained two eggs each, several contained one egg, and there were no young birds. Evidently the birds had only started nesting.

On 27th July, 1911, he visited Bramble Cay, of which visit he writes as follows :—" When at Darnley Island we heard that the natives and South Sea Islanders from there and from Murray Island were in the habit of paying weekly visits to Bramble Cay for the purpose of getting eggs and birds for food during the breeding season, and that they brought them away in boat-loads; also that a cutter had set out for Raine Island about the same time as ourselves, but had to put back on account of bad weather, and that three boats had just left Murray Island for Raine Island. At Bramble Cay I found only two nests of the Brown Gannet containing two eggs, and three containing one egg, five nests with one young bird in each, and dozens of nests from which eggs had been taken. I also saw a great pile of skins near a heap of ashes, where the blacks had been having a feast."

Tachypetes (Fregata) ariel. Lesser Frigate-Bird.—Mr. M'Lennan noted six of these birds at Cape Grenville. They headed out to sea when they reached the Cape. At Raine Island, on the 9th July, 1911, he notes :—" Several colonies of Frigate-Birds were seen near the beacon. Went and had a look at the Frigate-Bird colonies. They were eight in number, of from three to thirty nests. I counted 150 nests altogether, several of which contained one egg each; two of these were on the point of hatching. The rest of the nests contained one young bird each, in all stages of plumage, from a couple of days old to birds ready to fly. On the 27th July two birds only were noted at Bramble Cay."

Phaëthon rubricauda. Red-tailed Tropic-Bird.—When Dr. Dobbyn and I paid our very brief visit to Raine Island, in October, 1910, we must have overlooked the caves in which these birds are in the habit of nesting. Mr. M'Lennan's notes are as follows :—

9th July, 1911.—“ Had a look for Tropic-Birds under the ledges of rock, and found three nests. The first contained a half-grown young bird, the second one egg, the nest being a shallow depression in the sand 4 feet under the rock ; the third contained one small young bird not long hatched.”

10th July, 1911.—“ Examined all the holes and caves round the edge of the island. The first containing a Tropic-Bird's nest with one egg was at the back of a fair-sized cave, 20 feet long, 12 feet broad, and 4 feet high. The opening of the cave was 9 feet across by 18 inches high. Another nest under a small ledge of rock contained one small young bird. Did not find any more. Crawling into the caves was not exactly a pleasant game. The air in some of them was very foul, and a match would only just burn in it, and as a rule one or two Pectoral Rails would be found in each. As I crawled into them the Rails would make a dash out, and two of them gave me such a start by striking me in the face that I tried to stick my head through the several feet of coral rock that formed the roof of the cave. Found another nest in a cave in the centre of the island. The bird was sitting on it, but had not yet laid. This bird deserted the nest without laying.

15th July, 1911.—“ Went round the caves again, and found another Tropic-Bird's nest containing an egg. Saw one of these birds flying round the island ; it had two long tail feathers. When on the ground these birds cannot walk—they can only shuffle along. When on the wing the feet are kept out at a slight angle from the body with fully outspread webs, and are very conspicuous.”

27th July, 1911.—“ No Tropic-Birds at Bramble Cay.”

Pelecanus conspicillatus. Pelican.—Noted in fair numbers throughout the Gulf country, many of the water-holes and lakes containing flocks of twenty or more. All these rivers abound with fish, so that they are always assured of a good supply of food. They were frequently seen on Channel Rock, in Torres Strait. A large flock was also noticed on the swamp between Cripple Creek and Georgetown, where the Native Companions were congregating.

Circus gouldi. Allied Swamp-Hawk.—Noted at Peak Point, at Lockerbie, and at Bramble Cay.

Astur cinereus. Grey Goshawk. **Astur novæ-hollandiæ.** White Goshawk.—Mr. M'Lennan agrees with Mr. Harry Barnard in regarding the Grey and the White Goshawks as phases of the one species.* He found it, however, very difficult to gain information as to the mating of birds of the two colours and the resultant effect on the young. Like *Astur fasciatus*, the male bird is rarely seen anywhere near the nest: Many hours were spent waiting and watching for the appearance of the male bird, and, although fourteen nests containing either young or eggs came under observation, the male was seen only once. Eight of the females were grey birds, and six white. Where the male and female were seen both were grey. Only one nest contained a young bird ; it was nearly fully fledged, and was grey, the parent being also grey.

These birds began to build or repair old nests early in August, but no eggs were laid until October, the earliest record being on the 5th of that month. Nesting finished at the end of November, the only two records in December being of hard-set eggs or fully fledged

* See *Emu*, vol. x., p. 247.

young. One autumn nest was found to contain eggs, on the 17th April. Most of the nests were placed in a horizontal fork of a Moreton Bay ash, this tree being resorted to in the case of twelve out of the fourteen records, the other two nests being in melaleucas; the average height at which they were placed was 60 feet. Many of the nests, well out on horizontal limbs, could only be reached by means of a scoop on a long rod. I cannot do better than quote Mr. M'Lennan's note to illustrate some of the difficulties a climber has to contend with who seeks to investigate the nesting of this bird:—"In a pocket off Peak Point track I found a White Goshawk's nest 60 feet up in a big Moreton Bay ash; it contained two hard-set eggs. I had a terrible time climbing this tree. It was a hard tree to climb, and when I got 30 feet up I struck myriads of small yellow ants; they got all over me—in my eyes, ears, and nose—and bit savagely, so that you can imagine what it was to go the other 30 feet and back again before getting any relief. One nest was placed in a tree in which a colony of *Calornis* had nested. During the nesting season of the Goshawk the adult young of the *Calornis* form their principal article of food, and it is probable that the nesting of the Hawk is timed to that of this Starling."

Astur approximans. Goshawk.—Noted on the Cloncurry and Leichhardt Rivers. At Cape York, on 11th August, 1911, when the long grass was being burned off from several of the open pockets, some Australian Goshawks and Brown Hawks were attracted to whatever might be disturbed by the fire. On 1st November, 1911, one of these birds was flushed from her nest containing two eggs. This nest was placed 70 feet up, on a horizontal limb of a Moreton Bay ash, and on his way home Mr. M'Lennan flushed another Australian Goshawk from its nest 40 feet up in a Moreton Bay ash; it contained a young bird just hatched and two chipping eggs. The eggs were very small for this bird.

Accipiter torquatus. Collared Sparrow-Hawk.—Seen several times on Cloncurry and Leichhardt Rivers. At Cape York, on 24th November, 1910, a nest of this species was found, containing three fully fledged young birds, in a Moreton Bay ash. The birds were not at all common.

Erythrotriorechis radiatus. Red Goshawk.—Noted on many occasions at both Sedan and Byromine. One that was shot for a specimen was eating a Galah at the time. This species also came under notice on the Leichhardt and Gregory Rivers.

Uroæetus audax. Wedge-tailed Eagle (Eagle-Hawk).—Common in the Gulf country. At Lorraine, on the Leichhardt River, Mr. M'Lennan "saw a Nankeen Heron that he had previously disturbed coming down the river at full speed with a Wedge-tailed Eagle in pursuit. The Eagle stooped when opposite him, but missed the Heron, which took refuge in the tea-tree."

At Cape York this Eagle was noted on two occasions.

Haliæetus leucogaster. White-bellied Sea-Eagle.—Mr. M'Lennan first met with this species at Sedan, on the Cloncurry River, early in March, and afterwards at Byromine. When camped on the Leichhardt River he made the following note:—"Heard a strange bird calling as soon as I woke, so I got the gun and proceeded to investigate, but did not succeed in locating the bird. Returned to camp, had breakfast, and then went down the river. After a while I left the

water's edge and started back through the timber, and about 100 yards from the edge of the water I heard the same call, and followed up the sound. I soon located the bird, a White-bellied Sea-Eagle, sitting beside its nest in a large river gum. It flew off as I approached, and the male flew from a tree near by. Later in the day I climbed to the nest; it contained one hard-set egg. The nest was very large, and had evidently been used and added to for several years, measuring 6 feet in depth by 8 feet in diameter; egg cavity, 2 feet across by 6 inches deep. The nest was composed of sticks and lined with green leaves, and placed in a fork at about 50 feet from the ground."

Another nest, found on the Macarthur Islands on the 2nd July, 1911, was in a mangrove at a height of 14 feet. This nest measured 9 feet by 6 feet in width, 6 feet deep, with an egg chamber 1 foot across by 9 inches deep. Other nests, mostly containing young, were found on Cairncross, Bushy, and the Bird Islands early in July. There were also several nesting-places on the mainland at Cape York.

Haliastur leucosternus. White-headed Sea-Eagle.—This species was observed near Burketown and on the Norman River, in the Gulf country, but seldom at Cape York.

Haliastur spheurnus. Whistling-Eagle.—Tolerably common on the Gulf rivers. It was nesting in March at Sedan, and several nests were found containing eggs, in July, along the Leichhardt River. Common at Cape York.

Mitvus affinis. Allied Kite.—This species, so common in western New South Wales, is replaced in the Gulf country by the Square-tailed Kite. Only a few Allied Kites were noted by Mr. McLennan in the Gulf country, and an occasional one at Cape York.

Lophoictinia isura. Square-tailed Kite.—Quite the most plentiful of the Hawk tribe throughout the Gulf country, where dozens may be seen in the air at a time. They nest on the smaller coolibah creeks on the downs country, and seldom on the main rivers. On 23rd March, 1910, Mr. McLennan visited one of these creeks, and made the following note:—"Went to a water-hole about 8 miles from camp. Found four Kites' nests containing two eggs each, one with one egg, and one ready for eggs. Two old nests were also found, under one of which were seven lizards' eggs. These nests were at an average height of 12 feet from the ground."

Gypoictinia melanosternon. Black-breasted Buzzard.—From the notes made by Mr. McLennan, the Gulf country seems to be the headquarters of this fine species. He found them along all the Gulf rivers, and more than once noted as many as five females in the air at the same time. Several old nests were found in late summer and autumn, but were used only as roosting and feeding platforms. The birds evidently nest at the same time as in western New South Wales, as early in July on the Leichhardt River a bird was flushed from a nest which was newly lined with green leaves. They were noted on several occasions at Lockerbie and Paira, at Cape York.

Elanus axillaris. Black-shouldered Kite.—Several seen at the Brook, about 20 miles inland from Burketown.

Falco melanogenys. Black-cheeked Falcon.—Noted only once, on the Corella River, 25 miles west from Cloncurry.

Falco hypoleucus. Grey Falcon.—This fine Falcon was noted on all the Gulf rivers.

Falco subniger. Black Falcon. — Noted frequently in the Gulf country. 14th March, 1910. — "Saw a pair of Black Falcons examining old nests in the coolibah trees on a channel of the Gilliat, probably intending to use one of them. The birds were in splendid plumage, but too wary to admit of a close inspection." Several other pairs were seen on the Leichhardt and Gregory Rivers, but the spring is probably their nesting time.

Falco lunulatus. Little Falcon. — Writing from Sedan, Mr. M'Leunan sent the following notes:—24th February, 1910. — "Saw a Little Falcon trying to catch dragon-flies at the swamp. Sometimes it caught them, but more frequently missed."

31st March, 1910. — "When returning from the Big Dalgonally Lake to Byromine a Little Falcon accompanied me for some distance, catching the grasshoppers as they rose from under my horse's feet. It was very quiet, and would let me approach to within a few feet of it when perched on a tree."

4th April, 1910. — "A pair of Little Falcons at the Big Dalgonally Lake have taken possession of an old Whistling-Eagle's nest at the edge of the lake, and will probably breed there later on."

Also noted at Cape York.

Hieracidea berigora. Brown Hawk. — Seen on many occasions in the Gulf country and at Cape York, where the following note was made:—11th August, 1911. — "When burning off all the pockets the fires attracted a number of Brown Hawks and Australian Goshawks."

Hieracidea occidentalis. Striped Brown Hawk. — Noted at Corella Creek and on the Leichhardt.

10th July, 1910. — "On the Leichhardt River, 2 miles from Augustus Downs, shot a light brown Hawk. Saw a pair of these birds in a tree with a nest in it just ready for eggs."

7th July, 1910. — "On Leichhardt River saw a Black Falcon fly into a tree with a nest in it. Watched it for some time, but it did not go to the nest, so left it till later."

"Went down creek to where I had seen the Black Falcon. Flushed a bird from the nest, and climbed to it; it contained two eggs. I did not take them. A pair of Black Falcons was flying round the tree while I was at the nest."

11th July, 1910. — "Went down to creek where I had seen the Black Falcons about a nest. Flushed a light brown Hawk from the nest, which still contained two eggs."

Cerchneis cenchroides. Nankeen Kestrel. — A common species throughout the Gulf, and occasional at Cape York.

Pandion leucocephalus. White-headed Osprey (Fish-Hawk). — A nest found on the Hannibal Islands on the 1st July, 1911, contained three eggs. The bird was flushed from the nest, which was 40 feet from the ground in a horizontal fork of a large leafless tree. The nest, which was composed of sticks, seaweed, and pieces of pumice, measured 3 feet across by 2 feet deep, with an egg chamber 1 foot across by 6 inches deep.

On the Macarthur Islands another nest was found on the same date, containing a fully fledged young bird. This nest was on a small mangrove, 6 feet from the ground; it was 4 feet in diameter and 3 feet deep, composed of sticks, coral, pumice, and seaweed. Another nest, on the Bird Islands, found on the 2nd July, was built on a small

mangrove on the reef, and was unoccupied. On another island of this group a nest contained a fully fledged young bird. This nest was in a mangrove at about 15 feet from the ground, and composed of the same materials, 3 feet across by 2 feet deep. Two old nests were within a few hundred yards of this, one of which looked as though it was being prepared for nesting by another pair of birds. On the return journey, 17th July, this nest was still unoccupied, but another further along the reef was found to contain a fully fledged young bird. On visiting the Macarthur Islands two pairs were found building—one pair, the parents of the young bird noted on the 1st, in a small mangrove about 100 yards from the old nest; the second pair on a peculiarly shaped log that had been washed ashore. This nest was about half-built.

Visiting Cairncross Island on the 20th July, an Osprey's nest containing one small young bird was found on a mangrove growing on a long coral ridge amongst a dense growth of stunted trees. A pair of these birds was often seen about Cape York. The colouring of the soft parts in a fully fledged young bird was as follows:—Iris yellow; bill black, cere pale greenish-blue; legs greenish-white. The stomach contained fish. A female measured 18 inches in the flesh.

Ninox ocellata. Marbled Owl.—Mr. M'Lennan heard the note of this species when on his way down the Cloncurry River, and afterwards found it to be quite common on all the creeks and rivers that he visited in the Gulf country. The note is much the same as that of *N. boobook* of more southern latitudes. The specimens obtained averaged from 12 to 12 $\frac{3}{4}$ inches in length; irides yellow, bill blackish-brown. The stomach contained mostly beetles and grasshoppers. They are spring breeders.

Ninox macgillivrayi.* Macgillivray Owl.—A smaller and lighter Owl was obtained at Cape York, mostly at from 22 to 28 miles down the telegraph line and on the Jardine River. The note of this species is much softer than that of either *N. boobook* or *N. ocellata*. Its habits are in all respects similar: Iris yellow; bill horn colour, tip black; feet pale bluish-slate. The stomach contained large brown beetles in one specimen, and in another were found the bones and fur of a small rat.

Ninox connivens. Winking Owl.—This bird was heard calling by Mr. M'Lennan at his first camp on the Cloncurry River, and was afterwards found to be numerous throughout the Gulf country. At Sedan, on 22nd February, 1910, he imitated the call, when the bird flew to a tree at the back of his camp, and was shot and skinned. The call of this bird sounded like "Hoo, wuk, wuk," uttered in a fairly low key. The iris was yellow; bill black, cere greenish-yellow; feet light orange. The stomach contained grasshoppers and beetles.

On the 9th March a pair was shot and skinned. The female measured 16 inches and the male 17 inches. The stomach contents were the same as in previous specimen. Seven worm-like parasites were found under the skin between the eyes, each measuring 2 $\frac{1}{4}$ inches x $\frac{1}{32}$ inch.

When camped on the Leichhardt, 14 miles from Caloola Station, Mr. M'Lennan made the following note:—"13th June, 1910.—Heard

*Vide Mathews, *Austral Avian Record*, vol. i., p. 194.

a most peculiar call about 11 p.m. in the timber about 200 yards from the camp, so strolled out to investigate, and found it was uttered by a bird perched on a dry tree. It proved to be a Winking Owl. The call, as near as I can give it, was 'Karr, karr, karr, karr, koowook.' The stomach contained a half-digested bat and some grasshoppers."

"14th June, 1910.—Heard call like that of a Wood-Duck again last night; located the bird, and found it to be a Winking Owl."

"29th June, 1910.—On Leichhardt River, 20 miles beyond Augustus Downs, heard Winking Owls calling through the night. At dusk the call is "Hoo, wuk, wuk," and later on through the night "Karr, karr," and another call, "Chirr, chirr," in a very high key. They were heard for the last time where the Gregory divides into two channels, about 20 miles from Burketown. Skins of this bird were submitted to Mr. North, of the Australian Museum, who pronounced them to be indistinguishable from specimens of *N. connivens* obtained in New South Wales. Mr. Mathews considers them to be identical with the Northern Territory birds.

The breeding season is in the spring months.

Ninox peninsularis. Cape York Owl.—This species is very distinct, being shorter and darker in colour than the preceding. When camped in the scrub at Cape York Mr. M'Lennan made the following note:—20th December, 1910.—"*Ninox peninsularis* came along again to-night, and when I imitated its call it became wild and flew at me several times, coming to within 18 inches of my head. This occurred on several nights. The call was a repeated 'Kow, kow.' This assumed quite a comical aspect when the bird, perched on the ridge of my tent, looked down at me with an angry expression and uttered the word 'Kow.'"

The first nest containing eggs was found on the 6th August, 1911, at Lockerbie. From then the nesting season extended until the end of September. In this time fifteen nests were examined, containing either eggs or young. These nests were in large, open hollows, usually in big tea-trees (*Melaleuca*) at an average height of about 40 feet from the ground. The hollows averaged in depth about 2 feet, and were of an average diameter of about a foot. Many were bedded with a good layer of finely-chipped rotten wood. The mate of the sitting bird was usually found roosting in the branches of the same tree, or one near by. The clutch consisted of two eggs—in one instance only were three young birds found in a hollow. These were at different stages of growth. The youngest seemed to be about four days old, the next six, and the oldest about eight. The oldest one had a few feathers showing, eyes widely open; bill black, cere yellowish-green; legs and feet greenish-white. The smallest was covered with white down and had its eyes only slightly open. The bottom of this hollow was covered with the remains of Fruit-Pigeons. One hollow found in possession of a pair of Owls had evidently been the subject of a dispute, as it contained a broken egg of the Owl and a broken egg-shell of a Little White Cockatoo. Mr. M'Lennan had previously seen the Little White Cockatoos about the hollow, but the Owls were the ultimate possessors. That they were able to dispossess more formidable antagonists was shown in one case where their eggs were found in the freshly-lined hollow of *Microglossus aterrimus*. On two occasions Little White Cockatoos had their nesting-hollow in the same tree as a pair of Owls.

The soft parts of this Owl are as follows :—Cere greenish, bill horn colour, feet yellow.

Strix delicatula. Delicate Owl.—Frequently met with on the Gulf rivers and creeks, and also on one occasion at Cape York.

Trichoglossus septentrionalis. Northern Blue-bellied Lorikeet.—The only pair of "Blue Mountains" noted in the Gulf flew past the Brook Hotel, 20 miles from Burketown. At Cape York they were very numerous in all the open pockets, feeding on the blossoming eucalypts and other trees, and nesting freely in the spring in the hollows of tea-tree, Moreton Bay ash, or bloodwood, usually at a height of about 50 feet. Nesting operations commenced in August and continued until January. A single nest was, however, found in April. The invariable clutch was two. Thirty nests were examined by Mr. M'Lennan containing either young in all stages or eggs.

Ptilosclera versicolor. Varied Lorikeet.—Noted at Sedan, in flocks, feeding on the flowering box, in February, 1910, and later in the flowering tea-tree along the river at Byromine. Later again, in March, April, May, and June, they were noted through to the Leichhardt, where they were very numerous on the river-flats, which are covered with bloodwood, wattles similar to the Victorian black wattle, silver box, and bauhinia. They are probably spring breeders, as no nests were found in these months.

Cyclopsitta maccoyi. Blue-faced Lorileet.—When camped a few miles from the Jardine River, on the Cape York Peninsula, a pair of small Lorikeets was noted feeding high up in a flowering bloodwood near the camp. One was shot, but fell into some tea-tree brush and could not be found. Mr. M'Lennan is sure that they were of this species.

Microglossus aterrimus. Palm-Cockatoo.—This fine Cockatoo is a common object in the scrubs and open pockets on the upper end of the Cape York Peninsula. In the 1911 season Mr. M'Lennan inspected numerous nesting-hollows, seventeen of which contained either the single egg laid by the Cockatoo or a young bird. A large hollow is required by the bird, consequently a big tree or dead stump is usually chosen to nest in. The hollows were at an average height of 35 feet from the ground, and were of an average depth of 4 feet, with an internal diameter at the nest and at the mouth of the hollow of from 10 inches to 2 feet. Usually, however, the entrance is smaller than the bottom of the hollow. The egg is always placed on a bed of splintered twigs; these are carried to the nest in long pieces, and there splintered by the bird. This bedding may be several feet in thickness in some hollows and only a few inches in others. It serves to keep the nest clean, the excreta, which is very oily, and the scaling of the feathers filtering through.

The eggs vary a good deal in size and shape, the largest specimen measuring $2\frac{1}{8}$ inches \times $1\frac{9}{16}$ inches, an average of ten being $1\frac{7}{8}$ inches \times $1\frac{1}{16}$ inches. A rounded specimen measured $1\frac{3}{4}$ inches \times $1\frac{1}{2}$ inches; this was also the smallest.

Nests were found containing eggs and young birds as early as the 6th and 8th of August respectively, and the last on the 22nd of January; August, September, October, and November being the principal nesting months, so that most of the young are reared before the commencement of the wet season. One nest visited on the 8th August, 1911, contained a newly hatched young bird. This was

again inspected on the 1st September, when it was found to be about half-grown, with all its feathers encased in sheaths from 1 to 2 inches in length, giving it the appearance of a porcupine. This young bird was taken from the nest on the 18th September, 1911. The feathers were then just breaking out of their sheaths, half of them being clear; cheeks white, with a faint yellowish tint. On the 1st October the feathers were almost free of sheathing, of a beautiful glossy black, breast and abdomen barred, and cheeks beginning to assume a pinkish tinge.

Another young bird was first found in its hollow on the 13th August, 1911; it was then about 10 days old. On the 2nd of September it was a little larger than the other bird when inspected on the 1st, and the feathers were a little longer, but still encased in sheaths. This bird was taken from the nest on the 1st October, when it was nearly fully fledged, and in Mr. McLennan's opinion would have left the nest in about another 10 or 12 days. The feathers were black, without gloss; lower breast barred with yellowish; abdomen and a few feathers under the wing barred with narrow bars of sulphur-yellow, two or three bars to each feather; cheeks pinkish-red; upper mandible, basal half blackish-brown, terminal half whitish; lower mandible whitish, with brown streaks at the base; legs and feet greyish-black. Both birds did well on crushed boiled maize. These two birds were reared until May on crushed corn and wheat, when they took it whole; they were very fond of peanuts. They were sent away to Sydney in perfect health, and arrived safely, but one sickened and died not long after its arrival; the other is still alive and well, in the possession of Dr. D'Ombrian, who has made many interesting notes on the manners of his pet.

On several occasions parties of from five to seven of these birds were noted at play in a big tea or other tree in an open pocket, going through a whole series of evolutions and antics. Sometimes a pair would take up a position on a spout, and the others would all try to displace them by flying at them from all sides, and this would often be kept up for more than half an hour.

In the open forest these birds were found to feed principally upon the very hard nut or stone of the nonda plum or weeba-tree, and in the scrub on another very hard nut which had no local name.

Calyptorhynchus macrorhynchus. Great-billed Cockatoo.—A black Cockatoo frequently noted on the Gulf rivers seems to be referable to this species. The iris is dark brown, bill dull leaden colour, legs black. The gizzard contained seeds.

Cacatua queenslandica. Little White Cockatoo.—This bird was also fairly common on the Gulf rivers. One nest was examined on the Leichhardt River on 18th June, 1910, and found to contain two newly-hatched young. At Cape York this species is also common, nesting in the early spring months in trees growing in the open pockets. The earliest record of a nest containing eggs was on the 9th August, 1911. This nest was in a hollow in a Moreton Bay ash in which a pair of Owls (*N. peninsularis*) had reared a brood in the previous season. In all, about thirty nests were noted in August and the early part of September. One note, made on the 7th September, 1911, gives an idea of the difficulties the birds have to contend with in rearing their young:—"Had a look at nest of White Cockatoo that contained one egg on 27th August. The egg was still there, so also was an 8-foot carpet snake. The Cockatoo

was inside the snake. The tree, a Moreton Bay ash, was 2 feet 6 inches in diameter, and the hollow about 30 feet from the ground."

This bird, unlike its southern variation, does not feed on the ground, and is never seen in flocks.

Cacatua sanguinea. Blood-stained Cockatoo. — This Cockatoo, which is generally regarded now as synonymous with *C. gymnopis*, is a common bird in the Gulf country, and was noted frequently on the Cloncurry, Leichhardt, and Gregory Rivers. Several nesting-hollows were examined in February and March, 1910, containing either eggs or young birds. At Sedan, on the Cloncurry, each nest contained either two eggs or young.

At Normanton these birds were seen in large flocks in the winter.

Cacatua roseicapilla. Rose-breasted Cockatoo (Galah). — Common throughout the Gulf country, nests being found in February, March, and April.

Calopsitta novæ-hollandiæ. Cockatoo-Parrot. — Noted in February and March on the Cloncurry River. On the Leichhardt River, in June, they were very numerous, large flocks coming to water in company with *Melopsittacus undulatus*.

Ptilistes erythropterus. Red-winged Parrot. — Many of these birds seen on the Cloncurry and Leichhardt Rivers, and also at Cape York.

Platycecerus cyanogenys. Blue-cheeked Parrot. — Mr. M'Lennan made his first acquaintance with this species at Lockerbie, Cape York, when in company with Mr. Barnard, in January, 1911. He afterwards found them to be more plentiful on the Jardine River, where several specimens were obtained. One nest, found in May, contained newly-hatched young birds. From anatomical appearances of specimens obtained in March, this would be the usual nesting season for this bird. Like the other broad-tail Parrakeets, it is a seed-eater, and its habits are much the same as those of the more southern members of the genus. The colouring of the soft parts is as follows: — Irides brown, bill bluish-white, legs dark grey.

Platycecerus browni. Sooty Parrot. — When at Burketown, on the Gulf of Carpentaria, Mr. M'Lennan examined a pair of caged Parrakeets which answered in general to this species, but differed in having a broad red band across the chest. They were young birds, and the owner affirmed that in the adult birds the band was much brighter. They came from the Northern Territory, Queensland border.

Barnardius macgillivrayi. Cloncurry Parrot. — This species, well named the Cloncurry Parrot, ranges to the south and west of that town, being numerous on the Diamantina River, getting fewer in numbers to the north of Cloncurry. Going down the river, it was not found after 36 miles had been covered. It was noted on Corella Creek, about 28 miles west of Cloncurry, and again on the Leichhardt, Caloola Station being its northern limit on that river. It was not met with on the lower part of the Gregory, but would probably be found on the head waters of this fine perennial stream. The manager of Caloola Station, Mr. Macpherson, who had one of these birds in a cage, told Mr. M'Lennan that he obtained it on the Diamantina seven years previously.

Irides dark reddish-brown, bill bluish-white, legs lead colour. The crop usually contained grass-seed, and the gizzard grass-seed and

gravel (ironstone in the vicinity of Cloncurry). They are spring breeders.

Melopsittacus undulatus. Warbling Grass-Parrot (Betcherrygah).—Seen at Sedan, on the Cloncurry River, in February and March, flying north. In June they were breeding freely along the Leichhardt River. It is interesting to find from my Broken Hill notes that these birds were seen flying north about a month earlier than the date of Mr. M'Lennan's note at Sedan. Do these birds, after rearing their young, fly to North Queensland to breed again in June? They usually put in an appearance again in western New South Wales in September, and start nesting operations towards the end of that month.

Podargus papuensis. Papuan Frogmouth.—Fairly common at Cape York, where it is met with both in open forest and scrub. When in the latter it usually roosts low down. It utters a weird and ghostly "laugh"—a rapid "Hoo-hoo-hoo"—at times. It also has a call like *P. strigoides*, a series of "Ooms" repeated for half an hour at a time and at night. Nesting starts in October and continues until January. Only one egg is laid, and there are great variations in size and shape.

On one occasion, when he was climbing to a nest containing a young bird, the parent birds kept flying round and snapping their bills within a few feet of Mr. M'Lennan's head, and one kept uttering the laughing note previously heard at night.

Irides orange, bill yellowish-olive, legs olive-yellow. Stomach contents usually beetles.

In September numbers of these birds were seen flying over Thursday Island, making for the mainland.

Podargus brachypterus. Short-winged Frogmouth.—Several skins of a small Podargus were sent from the Gulf country by Mr. M'Lennan. They were referred to this species by Mr. A. J. North, to whom they were submitted. This species ranges over the whole of central, western, and north-western Australia, Northern Territory, and western and north-western Queensland.

Irides are yellow, bill and legs light olive-brown. Stomach contained beetles and grasshoppers.

Mr. M'Lennan heard a call which he attributed to this bird; it was like "Koo loo, koo loo," repeated from twelve to twenty times in succession.

Podargus phalænoides. Freckled Frogmouth.—Skins of a small Podargus from the Jardine River, Cape York Peninsula, collected in open forest, were submitted to Mr. North, who is of opinion that they closely approach Gould's description of this species. Gould's specimens came from North-West Australia.

Irides, outer circle golden-brown, inner orange-yellow; bill dark brown; legs pale olive. Stomach contained beetles.

They were found frequenting the open forest country. Mr. Wheatley found several nests containing each a pair of eggs in the open country bordering the Batavia and Ducie Rivers during the past season.

Podargus marmoratus. Marbled Frogmouth.—This small Podargus frequents the scrubs, where it has ample opportunity for concealment, consequently it appears to be a rarer bird than it really is. It is doubtful whether its nest and egg or eggs have yet been obtained.

Irides yellow, bill pale yellowish-green, legs pale yellow. Stomach contents usually beetles. Total length in flesh, 15 inches.

Mr. Wheatley obtained nests of this *Podargus* in the scrub country bordering the Ducie River; each nest contained three eggs.

Ægotheles novæ-hollandiæ. Owlet Nightjar.—Flushed from their roosting hollows on several occasions in the Gulf country—one grey and the others showing a general rufous colouring, such a variation as also occurs in *Podargus papuensis* and *P. marmoratus*.

Eurystomus pacificus. Australian Roller.—Dollar-Birds were plentiful both in the Gulf country, in February and March, 1910, and at Cape York, in March, 1912.

Aleyone pulchra. Purple Kingfisher.—First met with on the Gregory River, where a specimen (a male) was secured in July.

Irides dark brown, bill black with cream-coloured tip, legs scarlet. Stomach contents, small fish.

Other specimens were obtained on the creeks at Cape York.

On 17th February, 1911, the following note was made:—"Went to big swamp behind Charo mangroves, and searched through it. Flushed a Kingfisher (*A. pulchra*) from its nest in a mass of earth adhering to the roots of a fallen tea-tree near the edge of the swamp; it contained five fresh eggs. The tunnel was 6 inches long, oval in shape, $1\frac{3}{4}$ inches across by $1\frac{1}{4}$ deep; egg chamber 5 inches across by $\frac{1}{4}$ in depth."

After this they were found to be fairly plentiful along the fresh-water creeks, and several old nesting-places were noted.

Aleyone pusilla. Little Kingfisher.—This little bird is found in the mangrove swamps along the coast, frequenting the creeks that run through them; and as these swamps are also the haunt of the crocodile (*C. porosus*), a search for nests, often wading waist-deep in water, is no sinecure. Two nests were found by Mr. M'Lennan, both in February, 1911, an account of which has already appeared in *The Emu*.^{*} Each contained a full clutch of five fresh eggs. The total length of the bird in the flesh is $4\frac{3}{4}$ inches; irides brown, bill black, legs blackish-brown. Stomach contents, small fish.

The call is a faint whistle.

Syma flavirostris. Yellow-billed Kingfisher.—Mr. M'Lennan's first note on this bird was made on 2nd December, 1910:—"Noted *Syma flavirostris* for the first time; it is a beautiful bird. Saw another later in the day, and heard it calling; it has a mournful call, very difficult to locate. The nest is usually in a termites' nest in a tree in scrub or in open forest just at the edge of the scrub. They call only in the breeding season, and the call is almost continual when there is a nest. They resent any interference with or examination of a nest, and usually abandon one that has been examined."

Another note, made on 10th January, 1912:—"Flushed a *Syma flavirostris* from its hollow in a termites' nest 25 feet from the ground at the edge of the scrub; it contained three hard-set eggs. The birds attacked me when I was taking the eggs, and struck my hand four times, once drawing blood." Several nests were found containing young birds, but never more than three young or eggs in any nest.

In the flesh the adult bird measures $7\frac{1}{2}$ inches; irides brown, bill yellow with the terminal half of the culmen brownish-black, legs yellow. Stomach usually contained small lizards and beetles.

^{*} Vol. xi., p. 126.

Dacelo minor. Lesser Brown Kingfisher.—This smaller "Laughing Jackass" was found by Mr. M'Lennan to be fairly common on the Jardine River, frequenting the tall messmate and bloodwood forest. It has much the same habits as the better-known *D. gigas*. The note is similar, but not so loud. The birds' old hollows were noted in the termites' nests in trees at a height of from 10 to 30 feet from the ground. From a number of post-mortem examinations principal food seemed to consist of beetles and grasshoppers. The iris is greyish-brown, upper mandible black, lower dirty white with sides of base brown, legs pale olive. Mr. Wheatley found this species nesting in termites' nests high up in the trees near the Batavia River; each nest contained four eggs.

Dacelo leachi. Leach Kingfisher.—Fairly common on the Cloncurry, and numerous on the Leichhardt. At Cape York they were also common, frequenting and nesting in the trees in open forest. For nesting purposes they usually choose a hollow spout, whereas *D. minor* usually burrows into a termites' nest in a tree; on one occasion, however, Mr. M'Lennan found a nesting-hole of *D. leachi* in a termites' nest. At Cape York most of the nests found contained only two eggs or one young bird. No doubt the extreme and unusual dryness of the season accounted for the small clutches, as I have noted the same to occur in Victoria in respect to *D. gigas*.

Halcyon macleayi. Forest Kingfisher.—Noted all the way down the Cloncurry River.

At Cape York they were numerous in the open forest all the year round, nesting in termites' nests on the trees at an average height of from 30 to 40 feet. The usual nesting time is from October until the end of the year. A full clutch consists of five eggs, though a smaller number is often found. At Lockerbie, when he was examining a nest containing four heavily incubated eggs, the bird attacked Mr. M'Lennan savagely.

Halcyon pyrrhopygius. Red-backed Kingfisher.—Found both at Cloncurry and at Sedan. At the latter place the following note was made, 21st February, 1910:—"Found Red-backed Kingfisher's nest with three eggs, and another containing five young birds. The latter looked like little porcupines, all the feathers being encased in sheaths. Body feathers about $\frac{1}{2}$ inch long, primaries 2 inches, rectrices $1\frac{1}{2}$ inches. I got one of them out and was going to kill it for a skin, but it commenced to bite my thumb and try to swallow it, and it looked so fearless that I had to put it back in the nest."

They were common also on the Leichhardt River.

Halcyon sanetus. Sacred Kingfisher.—Mr. M'Lennan did not come across this species in the Gulf country, though I had previously obtained skins from Cloncurry. At Cape York Mr. M'Lennan first noted them as numerous in the mangroves on 19th March, 1911. Of three specimens obtained, all proved to be young birds. They were also numerous on the Hannibal, Macarthur, and Bird Islands in June and July, 1911, and again in the Mud Bay mangroves in February and March.

Halcyon sordidus. Mangrove Kingfisher.—This fine species, the largest of the smaller Kingfishers, is migratory. Appearing first at Cape York in September, it soon becomes quite numerous in the mangroves, where it is always to be found, and never in open forest or scrub. It feeds upon the smaller crustaceans, such as crabs, cray-

fish, or shrimps. Its note is similar to that of *H. sanctus*, but much louder. The length in the flesh of an adult male is 10 inches, of a female 9¾ inches; irides brown, bill black, legs dark lead colour. No nests were found.

Tanysiptera sylvia. White-tailed Kingfisher.—This species puts in its first appearance at the end of October or beginning of November, at or just before the commencement of the wet season, and soon starts nesting operations. For this purpose a low termites' nest on the ground, in the scrub, is chosen, and a hole, with nesting chamber at the end, drilled into it. Occasionally a termites' nest in a tree is utilized, up to a height of 10 feet. The termites' nest chosen is always an inhabited one, never a dead mound. During the nesting season this bird's trilling call may be heard all day long in the scrubs, from which it rarely emerges. The clutch of eggs is invariably three.

Merops ornatus. Bee-eater.—Mr. M'Lennan's notes on the movements of this bird are interesting when taken in connection with mine at Broken Hill. He writes. (13th February, 1910):—"At Sedan a large flock of Bee-eaters passed over the camp at dusk, going north." My note on 24th January, 1910, at Broken Hill, is:—"Several flocks of Bee-eaters passing over the town, going north. Many young birds, still being fed by their parents, were with the flocks." This migration occurs at about this time every year. It would appear that they go on to the Malay Archipelago and New Guinea, where they were noted by the B.O.U. expedition as being numerous after the month of April, though not met with previous to that date. It seems, however, that a few winter in North Queensland, as Mr. M'Lennan noted them at Caloola, beyond the Leichhardt, in June, and obtained specimens further down the same river on 1st July. He also saw them at Cape Grenville in July of the following year. At Cape York they congregated in great numbers on 11th February, 1912, and then, gathering together, resumed their northward flight across the Strait.

Eurostopodus albogularis. White-throated Nightjar.—Noted in the ranges about Cloncurry, where it was fairly common. Also seen at Paira, Cape York, and at Cape Grenville.

Caprimulgus macrurus. Large-tailed Nightjar.—Met with at Lockerbie, where it frequented some patches of black tea-tree scrub along the coast between the true scrub and the mangroves. One nest was obtained at Paira, in September, by Mr. Vidgen's boy.

Cypselus pacificus. White-rumped Swift.—Mr. M'Lennan made notes at Sedan on 11th February, 1910, that probably applied to this bird:—"Saw a large flight of Swifts passing over the tent at 7 p.m., flying north. Could not identify them, as it was too dark."

14th February, 1910.—"Another flight of Swifts passed over, going north, at dusk."

8th April, 1910.—"Saw some Swifts flying south-west this afternoon—Australian Swifts, I think they were, as I distinctly saw the white rump. One of the men on the station told me that they usually put in an appearance after a steady fall of rain."

At Cape York the earliest note is 5th November, 1911:—"Australian Swifts noted flying south."

16th November, 1911.—"Lockerbie. Australian Swifts flying south to-day."

26th December, 1911.—“Saw a great flock of Swifts circling over the house a little before sundown.”

4th March, 1912.—“Paira. A large flock of Australian Swifts noted flying in a southerly direction.”

31st March, 1912.—“Lockerbie. A large flock of Australian Swifts hawking over the forest country all day.”

17th April, 1912.—“Lockerbie. A few Australian Swifts hawking over open forest country near the house at sunset.”

Cuculus optatus. Australian Cuckoo.—This Cuckoo was on several occasions noted at Cape York in the summer months. It was never there in numbers; it was exceedingly shy, and so difficult of approach that no specimens were obtained.”

Cuculus pallidus. Pallid Cuckoo.—A young fully fledged specimen was obtained at Sedan on 15th February, 1910. It was being fed by a pair of Red-throated Honey-eaters (*Conopophila rufogularis*). The colouring of the soft parts in this young bird was:—Irides light stone colour, legs and feet leaden. Stomach contents, large grasshoppers and portions of beetles.

On the 16th February another young bird was seen being fed by a pair of Yellow-throated Miners (*M. flavigula*); it was a much older bird than the first, but the colouring of the soft parts was the same.

It is interesting to note that both the small Red-throated Honey-eater and the larger Miner fed these young Cuckoos on the usual food of the Cuckoo family, and not on their own. Even the larger foster-parents rarely eat such large insects.

This species was not noted at Cape York, though common in the Gulf.

Cacomantis variolosus. Square-tailed Cuckoo.—The Square-tailed Cuckoo, or a smaller variation of it, was common at Cape York, frequenting the swamps and open pockets, and being rarely met with in the scrubs. The tea-tree swamps behind the mangroves are resorted to by the small Honey-eater, *Glyciphila modesta*, for breeding purposes. In numbers of their nests Mr. M'Lennan found one or more eggs of a Cuckoo—pure white, sparingly spotted with fine specks of brown, very like yet distinguishable in shape and lustre from the eggs of the Honey-eater. Such an egg has been attributed to *Cacomantis castaneiventris*, a bird never seen out of the scrub and never by any chance in the mangrove or tea-tree swamps, where these eggs were found. On this evidence it is fair to assume that the eggs found in the nests of *Glyciphila modesta* are those of this smaller form of *C. variolosus*. This type of egg was also found in a nest of *Ptilotis analoga*, in scrub, and also in a nest of *Malurus amabilis*. At the Jardine River a young Cuckoo was obtained as a specimen which, though differing remarkably from the adult bird, was probably the young of *C. variolosus*. It was being fed by a pair of *Glyciphila modesta*, and was taken in tea-tree country. On one occasion two of these Honey-eaters were noticed chasing a Square-tailed Cuckoo out of a swamp where they had their nest. Although these Cuckoos were so numerous, no eggs were found which bore the least resemblance to the eggs of the Square-tailed Cuckoo of more southern latitudes.

A male of this northern form measures in the flesh $8\frac{3}{8}$ inches; irides reddish-brown, eyelids pale greenish-grey; upper mandible blackish-brown, lower a shade lighter; legs pale olive, soles of feet yellow. Stomach contents, hairy caterpillars, beetles, and other insects.

Cacomantis castaneiventris. Chestnut-breasted Cuckoo.—This bird finds its living in the thick tropical scrubs of the Peninsula, and was not seen out of them, and never in the mangroves or tea-tree swamps. It is a beautiful bird, with its glossy dark slaty-blue upper surface, rich chestnut under-parts, and bright yellow eyelids. It feeds on beetles and other insects. Its nesting habits require further elucidation. Mr. M'Lennan is certain that the eggs found in the nests of *Glyciphila modesta* are not those of this Cuckoo. The only Cuckoo eggs, apart from those of *C. russata*, found in the scrub were those found in the nests of *Philotis analoga* and *Malurus amabilis*, and they are indistinguishable from those found in the nests of *Glyciphila modesta*, and *Cacomantis variolosus* is occasionally found in the scrub.

An average adult male measures in the flesh $8\frac{1}{4}$ inches to $8\frac{3}{4}$ inches; irides, inner circle brown, outer yellow; eyelids bright yellow; bill black, basal half of lower mandible yellowish-brown; legs and feet bright yellow.

Chalcococcyx basalis. Narrow-billed Bronze-Cuckoo.—From Sedan Mr. M'Lennan sent a clutch of eggs of *Malurus assimilis* containing an egg of this Cuckoo. I had previously to his visit obtained a skin from the Cloncurry district.

Chalcococcyx plagusus. Bronze-Cuckoo. — In April, 1911, Mr. M'Lennan obtained two skins of this bird on the Jardine River, Cape York. The birds were not numerous, and those obtained were both females. Irides greyish-brown, eyelids pale green, bill black, legs dark or blackish-green. Stomach contents, caterpillars.

Chalcococcyx russata. Rufous-throated Bronze-Cuckoo.—This, the most numerous of the small Cuckoos at Cape York, is easily recognized in the flesh by its bright scarlet irides and eyelids. It frequents for the most part the open forest and mangroves, though occasionally met with in the scrub. It was also noted on Bushy Island, near Cairncross Island, and on the Sir Charles Hardy group, in June and July, and was prevalent throughout the summer and autumn on the mainland. The usual foster-parents are the Gerygones, *G. personata* and *G. magnirostris*. On one occasion Mr. M'Lennan saw one of these Cuckoos following a pair of *G. magnirostris* in the mangroves, where the latter species usually nests. This attention was resented by the Gerygones, who, after repeated assaults on the Cuckoo, succeeded in driving it away.

In an adult male the soft parts are:—Irides scarlet, eyelids bright scarlet, bill brownish-black, legs dark olive-brown. In a less mature bird the irides were pinkish-brown.

Any eggs of a dark chocolate colour taken from nests of *Gerygone personata* or *G. magnirostris* are sure to be those of this bird:

Eudynamis cyanocephala. Koel.—First met with on the Cloncurry River early in February. One young bird which was being fed by a pair of Yellow-throated Miners, and was obtained for a specimen, was, in its barred plumage, even more beautiful than the adult of either sex. In this bird the irides were light stone colour, feet and legs lead colour. Stomach contents, grasshoppers and beetles.

In a young male about to assume the adult plumage the irides were orange; upper mandible pale brownish-horn, lower pale greenish-horn; legs greenish-slate. In an adult male—irides ruby-scarlet, bare skin round eye black, bill pale green, legs greenish-lead. Stomach

contents wild fruits. In an adult female—irides ruby-red; bill pale olive-green, base of culmen blackish; legs dark olive-green. Stomach also contained wild fruits.

Scythrops novæ-hollandiæ. Channelbill.—These birds, known in the Gulf country as Storm-Birds, on account of their first appearing with the thunderstorms which usher in the wet season, were common during the summer months. On 8th February, 1910, Mr. M'Lennan noted eight in one tree. On 12th March, 1910, he made the following note:—"Struck a channel of the Gilliat River, and found a Short-billed Crow's (*C. bennetti*) nest containing five young Channelbills almost ready to leave the nest. I took two for specimens. They were all in series—there seemed to be about two days between each of them, and one would be led to believe that the eggs had been laid by the same bird." As two young Channelbills have often been seen by several reliable observers being fed by Crows or other foster-parents, it seems certain that they do not eject one another from the nest. At the same time it is equally certain that they eject the progeny of their foster-parents. How is it that such nestlings are able to distinguish between their own kith and kin and those of the foster-parent, especially, as seems to have been the case with the five young Cuckoos, where they were hatched out in succession? Unfortunately, as darkness overtook Mr. M'Lennan on this occasion before he could regain his camp, and he had to spend the night under a tree, the steamy weather spoiled the skins, but a description was made of one, a male:—"Head fawn colour; back, tail, and wing coverts mottled fawn, grey, and brown; tail and wing feathers barred; under surface dirty white. Irides brown, bill reddish-brown. No trace of a channel on the bill. Legs lead colour. Stomach contents, caterpillars, beetles, and grasshoppers."

Another Crow's nest contained one young Channelbill, and a third an egg of the Channelbill with one of the Crow.

The loud, screeching call of this species could be heard at any hour of the day or night.

At Cape York they were seen only occasionally.

Pitta simillima. Lesser Pitta.—This smaller northern form is fairly common in the Cape York scrubs from July until the end of March. They nest in the wet season, from December until March, building a domed nest, usually on the ground at the base of a tree or by a fallen log. The nest is generally constructed of twigs and lined with leaves and fine fibres. Three eggs are the usual clutch. In the nesting season their call is frequently heard; it consists of a three-note whistle, and another sharp "Keow" repeated at intervals. They will always answer their call if imitated, and come to one. They may often be seen sitting in trees and calling. They spend a good portion of their time on the ground, where they find their usual food, which consists of beetles and other insects. When building they usually find their material on the ground, and have been seen hopping along to the nest with leaves.

Colouring of soft parts:—In adult male—irides brown, bill black, legs fleshy-straw colour. Length in flesh, from tip of bill to tip of tail, 7 inches; to the toes, 9 inches.

Not noted in vicinity of Batavia and Ducie Rivers.

Pitta mackloti. Blue-breasted Pitta.—Found during summer months only at Cape York, when they are common.

The note is a mournful whistle of two notes. The birds will always answer a call, and may often be seen sitting in a tree and calling.

The nest is usually placed on a stump or in a mass of vines at from 2 to 8 feet from the ground. It is domed, composed of twigs and leaves, and lined with fine black, hair-like vegetable fibres.

An adult male measures in the flesh, from tip of bill to tip of tail, $7\frac{1}{4}$ inches; to toes, $8\frac{3}{4}$ inches. Irides dark brown, bill black, legs fleshy-slate. Stomach contents, beetles.

Common in Batavia and Ducie River scrubs.

Hirundo neoxena. Welcome Swallow.—Noted both at Cape York and in the Gulf country.

Cheramœa leucosternum. White-backed Swallow.—Found at Sedan in March, and on the Leichhardt River in June.

Petrochelidon nigricans. Tree-Martin.—Observed occasionally at Cape York and in the Gulf country, not nesting at any time

Petrochelidon ariel. Fairy Martin.—Frequently noted in Gulf country. On a creek off the Leichhardt River, 2 miles from Augustus Downs, a large colony of Fairy Martins was engaged in nesting operations under an overhanging rock on the side of the creek. The Leichhardt at this point flows over a bed of rock, and is bare of timber.

Micrœca pallida. Pale Flycatcher.—Numerous all the way down the Cloncurry River, in the trees round the lakes and in those lining subsidiary channels. They were also numerous on both the Leichhardt and Gregory Rivers, even as far as Burketown. Not seen at Cape York, where the following species takes its place.

Micrœca flavigaster. Yellow-breasted Flycatcher.—Fairly common at Cape York, frequenting open forest country all the year round, where its tiny nest, containing one egg, is placed on some high horizontal branch. Its habits in general are similar to those of the southern members of the genus. During the nesting season, which extends from July until the end of the year, the male may often be heard whistling in the topmost branches of the forest trees.

Melanodryas bicolor. Hooded Robin.—A form intermediate between this and *M. picata* is fairly common in the Gulf country, where it was several times noted on the Cloncurry, Corella, and Leichhardt Rivers, frequenting either box or gidgee country.

Smicrornis flavescens. Yellow-tinted Tree-Tit.—Common in the Gulf country, where it frequents the box flats, finding a living in the leaves of low box trees. Nests were found in February, March, and April, commonly placed at the end of a drooping branch. The birds usually went about in small flocks of five to six. On the Leichhardt, where conditions were so favourable to bird life, these birds were especially numerous.

Gerygone albogularis. White-throated Fly-eater.—Noted first about 25 miles from Cairns, in the scrub. At Sedan they were numerous, especially in the gidgee. Also seen on the Leichhardt and Gregory Rivers. Iris dark orange or orange-scarlet; bill, feet, and legs black. This species was also heard on the Jardine River.

Gerygone magnirostris. Large-billed Fly-eater.—First observed at Cape York, where they find a living all the year round in the mangroves, feeding amongst the leaves. They nest in these trees, and

the nest is usually placed in close proximity to that of a large hornet which builds a comb nest. Nests were found from September until March, and to obtain them it is usually necessary to row round the coast and up the channels in the mangrove swamps. This bird is a common foster-parent of the Cuckoo (*C. russata*).

The nests are usually constructed of fine, soft rootlets, and lined with feathers. "Crossed a small creek in mangroves and found a nest of *G. magnirostris* containing one egg of the owner and one of Cuckoo. Had to wade out into the creek a few yards to get the nest. When I was putting the eggs into my bag a crocodile a few yards down the creek emitted a roar."

Gerygone personata. Black-throated Fly-eater.—Also met with at Cape York, where it frequents the tropical scrub, and is rarely seen in the mangroves. Usually found feeding in company with *Piezorhynchus albiventris*, *Machæirhynchus flaviventer*, *Arses lorealis*, *Malurus amabilis*, *Sericornis minimus*, and *Rhipidura dryas*. The nest is usually placed near the papery nest of a small yellow hornet or wasp, sometimes near that of the large hornet, and occasionally away from any hornet's nest.

The young birds have four peculiar head-plumes, which they have the power of erecting and quivering vigorously. When one looks into a nest these head-plumes are put into motion by the birds, and remind one of a number of caterpillars waving about. The gape of the young is a rich yellow colour.

The Cuckoo *Chalcococcyx russata* also makes use of this species as a foster-parent.

Nests were found from September to May, and, as usual with this genus, contained two eggs.

This note was made from observations taken in a dry season. During the past season, 1912-13, three-egg clutches were more often found.

Heteromyias cinereifrons. Ashy-fronted Robin.—Only noted at Atherton, in November, 1909, when it was nesting.

Pœcilodryas cerviniventris. Buff-sided Shrike-Robin.—First met with when the Gregory River was reached. This, then, is its eastern limit. It usually feeds on the ground, in the short grass, and when disturbed makes for the pandanus growing along the river-banks, where it is usually to be found at other times, and in which it doubtless nests. The call of this bird is a piping whistle repeated four times very loudly; it is something like the call-note of a *Platycercus*. Irides brown, bill black, legs brownish-black.

Pœcilodryas superciliosa. White-browed Shrike-Robin.—Only one bird seen, and secured for identification. It proved to be an immature female, and was obtained at the Jardine River. "A sprightly little bird. When on a limb, erects its tail and droops its wings after the manner of the Fantails. Feeds on small beetles and other insects. Irides dark brown, bill black, legs fleshy-brown."

Pœcilodryas pulverulentus. White-tailed Shrike-Robin.—Observed first at Cape York. It is a denizen of the mangroves, and is locally known as the Mangrove Robin—an excellent and distinctive vernacular name for it. It may be seen in fair numbers by anyone who has the hardihood to search amongst the mangroves and the patience to watch and wait for it when its call is heard. This, a short, low whistle, is frequently heard in the breeding season, and if

imitated will bring the bird to you. The female does most of the nest-building, the male usually feeding close by. The nests are placed in a dead or living fork of a mangrove at from 8 to 14 feet from the water, and are made to assimilate in colour and character of exterior to the limb they are on, so that they are very difficult to detect. When flushed from the nest the female drops low down, flies right away, and does not return for some considerable time. The eggs, two in number, vary considerably in colouration, the ground colour in some being a light green and in others a dark olive-green.

Pœcilodryas albigularis. White-throated Shrike-Robin.—Not a common species at Cape York, only one pair being noted, in a big patch of scrub about $4\frac{1}{2}$ miles from Lockerbie. This pair frequented the same locality for three months before nesting. They are very quiet birds, and only once in the three months did Mr. M'Lennan hear their call, which was a short, harsh "Chee-chee-chee." "When I was watching them they would often fly to within a few feet of where I was sitting and cling motionless to the side of a tree, a habit identical with that of the Yellow-breasted Shrike-Robin of Victoria. The nest was placed in a lawyer vine, about 10 feet from the ground, and contained two eggs. I sat down some distance away and waited for the birds to return. After waiting for about half an hour I saw one of the birds fly to a tree about 10 feet from the nest. It sat there for about ten minutes, then flew to within a couple of feet of the nest. As soon as I moved it dropped from the nest and fluttered away through the undergrowth."

Measurements of soft parts in a female specimen:—Length, $4\frac{1}{2}$ inches; irides greyish-brown; bill black, base of lower mandible transparent white; legs pale yellow. Stomach contents, small beetles and other insects.

Mattingleya inornata. Plain-coloured Shrike-Robin.—Under this heading we must now put a bird which was originally described as an *Eopsaltria* by Dr. Ramsay in the "Proceedings of the Zoological Society of London," 1874, p. 604. The type is in the Australian Museum, the habitat being given as the scrubs to the north of the Endeavour River, but the locality on the label of the type is Cardwell. The former locality is more likely to be the correct one, as the bird is fairly common in the Cape York scrubs, and even more so on the Pascoe River. I had it pointed out to me by Mr. M'Lennan in the scrub at Somerset in 1910, where we watched and listened to it for some time. According to Mr. M'Lennan, it is never to be seen near the ground, always finding its living amongst the tangle of vegetation up in the scrub trees, and in this situation it was that we saw it disporting itself. It has a Robin-like note and all the ways of this group, and not in the least resembles any of the *Pachycephalinae*, under which group it has been placed by Dr. Hartert, who has described it as *Pachycephala peninsulæ*. Mr. Mathews created a new genus for it in *Mattingleya* and as it is obviously neither a *Pachycephala* nor an *Eopsaltria* it will have to take its place under this new genus.* However, I must disagree with Mr. Mathews in still calling it a Thickhead. Its nest and eggs, when found, will help towards settling the points in dispute. Eggs have been sent down from Cape York as those of *P. peninsulæ*; these are, however, in most instances doubtless those of *P. falcata*, the only Thickhead in that region.

* *Vide* Matthews, *Austral Avian Record*, vol. ii., p. 11.

Rhipidura albiscapa. White-shafted Fantail.—First met with in April at the Jardine River, Cape York, where a few were seen, and on the 5th of May, 1912, one was seen near Peak Point. Very rare.

Rhipidura albicauda. White-tailed Fantail.—Noted in the Gulf country, on the Leichhardt River, where specimens were secured. Irides brown, bill and legs black.

Another specimen was secured on the Gregory River.

Rhipidura dryas (?). Wood-Fantail.—First observed on the Gregory River at first camp, and thence all the way down. Irides brown, bill brownish-black, legs dark slaty-brown.

This bird occurs at Cape York in fair numbers, but does not breed, leaving by the end of November or beginning of December, to re-appear in February, staying two months, and disappearing in April. This applies to the seasons 1911 and 1912. This species is more probably *R. rufifrons*, *R. dryas* not appearing east of the Gulf.

Rhipidura isura. Northern Fantail.—Numerous on the Gregory River all the way down to Burketown, this fine, large Fantail does not occur at Cape York, and probably not on the eastern coast at all. During the two years that Mr. McLennan was at Cape York he saw no sign of it.

♂, irides brown, bill and legs black.

Rhipidura motacilloides. Black-and-White Fantail. — Numerous throughout the Gulf country, but only once noted at Cape York.

Seisura inquieta. Restless Flycatcher.—A Restless Flycatcher found throughout the Gulf country is intermediate between this species and *S. nana*. It was numerous on the Leichhardt and Gregory Rivers. In the male the irides are dark brown, bill and legs black, the female differing only in the colouring of the lower mandible, which is leaden.

Myiagra concinna. Blue Flycatcher.—Two specimens were secured on the Leichhardt River, where they were feeding about the tea-tree. They were not very plentiful.

At Cape York this bird, which has been separated by Mr. Mathews as *M. yorkei*, is a common species all the year round, breeding in the open forest, mostly on the bloodwoods, and also in the mangroves, in the summer months.

"Flushed *Dacelo leachi* from hollow in a bloodwood. A Blue Flycatcher had its nest in the same tree; it contained the usual clutch of three eggs. The bird sat on the nest till I touched her."

Myiagra latirostris. Broad-billed Flycatcher.—Found always in the mangroves at Cape York, where they find an abundance of insect life amongst the leaves. They usually place their nest on a dead twig about 2 feet above high-water mark over a channel in the mangroves. When building one of the birds was always near the nest. The male would sit in some chosen position, calling all the time that the female was away gathering material. When she returned he would flit away on the same quest.

Machærirhynchus flaviventer. Boat-billed Flycatcher. — Always found in the scrub, where it finds its living amongst the leaves and branchlets from within 2 feet of the ground to the tops of the scrub trees, snapping up the insects which cling to the leaves. Whilst building the male is constantly calling, at the same time lending aid in the construction of the nest. Although the male

whistles when searching for food, a more persistent whistling is usually an indication that a nest is being built. They nest during the wet months of the year, from November until March, and usually lay two eggs.

Arses lorealis. Frill-necked Flycatcher.—Found at Cape York. It seems to search the stems of vines and trunks of trees for its insect food, hopping up round a big tree trunk and searching the crevices in the bark. The nest, thin and net-like, is usually suspended by the rim from two vines or from a loop of vine, and placed at from 8 to 20 feet from the ground. It is a bird of the scrub, and nests in the wet months. In a male the irides are brown, bare skin round eye bright blue, bill horn colour, legs dark leaden.

Piezorhynchus nitidus. Shining Flycatcher.—Mostly found in mangroves and tea-tree swamps, only occasionally in the scrub. It has a very pretty whistling call, and will always come when the note is imitated. Finds its food usually amongst the roots and lower branches of the mangroves. The stomach contents of those examined consisted of beetles and other insects.

The nest is usually built in an upright fork of mangrove or tea-tree, usually about 3 feet from the water. The male bird shares in the task of incubating the eggs. They nest in the summer months. In a male the irides are dark brown, bill leaden-blue with tip and cutting edges black, legs black.

Monarcha albiventer. White-bellied Flycatcher.—This northern form of *P. gouldi* is fairly common at Cape York in a good season. It is always found in the scrub, feeding from low down to the upper branches of the vegetation. It also nests in the wet months of the summer. In a dry season, like that of 1911-12, very few nest. Iris dark brown, bill horn colour, legs dark leaden-blue.

Monarcha leucotis. White-eared Flycatcher.—Only one of these birds was seen during Mr. M'Lennan's stay at Cape York. ♂, length $5\frac{3}{4}$ inches; iris dark brown; upper mandible black; lower mandible, tip black and the rest bluish-white; legs greyish-black. This is no doubt its northern limit.

Monarcha carinata. Black-faced Flycatcher.—A number of these Flycatchers arrived at Cape York in February, 1911. They seemed to come from the south, stayed for about two months, and then disappeared, so that they can be regarded only as visitors to this region. ♂, irides brown, bill horn colour, legs horn colour. Stomach contents, insects.

Monarcha canescens. Pearly Flycatcher.—Only one noted at Cape York during Mr. M'Lennan's stay there. ♀, irides dark brown; bill horn colour, black tip; lower mandible dark horn colour; legs horn colour. Stomach contents, insects. This is probably a Papuan bird, only occasionally visiting Cape York.

Pteropodocys phasianella. Ground Cuckoo-Shrike.—Very plentiful throughout the Gulf country, where in parties of from three to six they may often be seen feeding on the ground. The flight is undulating, like that of *Graucalus melanops*. One nest only was found, near the Cloncurry River; it was placed in a horizontal fork of a gidgee at about 14 feet from the ground, and contained three young birds.

Graucalus melanops. Black-faced Cuckoo-Shrike. — Numerous

throughout the Gulf country, and during the winter months only at Cape York, where they assemble in large flocks prior to their departure. After September only an occasional bird is noted.

Graucalus hypoleucus. White-bellied Cuckoo-Shrike.—Seen only at Cape York, where they were most numerous down towards the Jardine River, and were present all the year round. They nest in the early summer months, in open forest. Iris brown, bill and legs black. Stomach contents, large winged insects and caterpillars.

Edoliisoma jardinii. Great Caterpillar-eater.—Frequents the open forest country at Cape York, where it is fairly common.

Campephaga humeralis. White-shouldered Caterpillar-eater.—Common in the Gulf country, but only occasional at Cape York.

Campephaga leucomela. Pied Caterpillar-eater—Fairly numerous all the year round at Cape York, in the scrub, open forest, and mangroves. One nest was found, early in February, built on the topmost branch of a mangrove at 50 feet from the ground. The nest is a very small structure, hardly more than sufficing to hold the single egg.

Drymodes superciliaris. Eastern Scrub-Robin.—Fairly numerous in the scrub at Cape York, where its note, a long-drawn-out whistle, may often be heard in the breeding season. It finds its living on the ground, where it hops about quietly, turning over leaves and other *débris* in search of hidden insect life. When they are nesting the male will at once put in an appearance when its call is imitated, and becomes very excited. The female does all the nest-building and alone engages in the task of incubating the eggs.

22nd December, 1910.—“Watched a pair of Scrub-Robins for some time engaged in building a nest; it was about half-built. The female selects a leaf and then hops along to the nest. Male follows her about, but does not do any work. It is a difficult job watching these birds, as one cannot see far through the undergrowth, and you have to get down on your hands and knees and crawl about after them.”

28th December, 1910.—“Went out to Scrub-Robin’s nest previously noted building. It came on to rain heavily after I had got some distance from the camp, and made things pretty miserable. The nest contained two eggs. It was built in the side of a small hollow in the ground, composed outwardly of a thick wall of twigs, some of which were $\frac{3}{8}$ -inch thick and from 3 to 8 inches in length, and lined with dead leaves and fine fibres. Egg chamber $3\frac{1}{2}$ inches deep and 3 inches in diameter. Whole nest was 9 inches across and $4\frac{1}{2}$ inches high on one side and 3 inches on the other.”

♂, iris brown, bill black, legs fleshy-straw colour. Stomach contents, beetles.

Pomatorhinus intermedius (Mathews).—A form intermediate between *P. rubeculus* and *P. temporalis*, with a leaning towards the former, is found in the Gulf country in fair numbers, and, according to Mr. Mathews, is identical with the Northern Territory bird to which he has given the above sub-specific title.* It usually lays two eggs.

Length of adult male, 10 inches; irides light stone, bill and legs

*Mathews, “Reference-list,” p. 335.

black. In the various stomachs examined were beetles, spiders, grasshoppers, and chrysalides.

The Cape York bird, which Mr. M'Lennan found to be fairly common in the vicinity of the Jardine River, more nearly approaches *P. temporalis* in type. On one of its old nests was a nest containing eggs of *Entomyza harterti*, a form which differs only slightly from *E. cyanotis*.

Cinclorhamphus rufescens. Rufous Song-Lark.—This species was on several occasions noted in the Gulf country, but was never very numerous.

Ephthianura crocea. Yellow-breasted Bush-Chat.—When camped at Sedan Mr. M'Lennan procured a specimen of this species. Only a few pairs were noted. ♂, length $4\frac{1}{2}$ inches; irides rich cream colour, bill black, legs dark brown. Stomach contents, small insects and caterpillars.

Acrocephalus australis. Australian Reed-Warbler —Noted at Sedan, in the lignum, on Dalgonaally Lake.

Cisticola alexandriæ.*—Mr. Mathews informs me that the Cape York bird is the same as that described by him from the Northern Territory. It certainly is very different from the southern bird. It is common both in the Gulf country and at Cape York, but absent from the latter locality in the winter.

Megalurus gramineus. Little Grass-Bird.—Observed at Sedan.

Megalurus galactotes. Tawny Grass-Bird.—Noted first on the Leichhardt, 2 miles beyond Augustus Downs, in the cane-grass growing along the side of a water-hole. Mr. M'Lennan states that he "sat for some time listening to their delightful song, with its rich and varied notes." ♂, irides brown; bill, upper mandible brown, lower dirty white; legs very pale brown. Stomach contained small insects and beetles.

Acanthiza chrysorrhoa. Yellow-tailed Tit-Warbler. — Frequent throughout the Gulf country. Many nests noted, at the end of drooping gum branchlets.

Sericornis minimus. Little Scrub-Wren.—Numerous in the Cape York scrubs, where they fossick for food amongst the dead leaves and *débris* on the ground or amongst the masses of fallen vines and trees. They are easily approached. Average length of male, about $4\frac{1}{2}$ inches; irides deep orange-scarlet; upper mandible pale brown, lower brownish-white. Stomach contents, insects.

Malurus cyanotus. White-winged Wren-Warbler.—Mr. M'Lennan came across a few of these very small Wren-Warblers when camped at Sedan. They were found amongst the lignum bordering a water-channel at some distance from the camp. They were very shy birds and only a pair was secured for skins.

♂, irides brown, bill black, legs blackish-brown. ♀, irides brown, bill and legs brown. Stomach contents in both, small insects.

Malurus assimilis. Purple-backed Wren-Warbler.—This Wren-Warbler was found to be fairly common throughout the Gulf country. On the 28th of March a nest was found in rather an unusual position for this bird, being placed amongst the leaves of a tea-tree at about

* Mathews, "Reference-list," p. 343.

5 feet from the ground. It was composed outwardly of fine bark, strips of grass, and skeleton leaves, and lined with fine rootlets and horsehair. It contained three eggs, one of which was a Cuckoo's (*Chalcococcyx basalis*.) In Western New South Wales this species builds on or very close to the ground. Mr. M'Lennan found it frequenting the tea-tree along all the rivers from the Cloncurry to the Brook, near Burketown.

Malurus amabilis. Lovely Wren-Warbler.—This species represents the Chestnut-shouldered group at Cape York. The female, being blue, differs markedly from the females of the other *Maluri*. It frequents the scrubs, where it is quite common, and is rarely seen out of them, and then only when crossing from one patch of scrub to another. The largest flock noted consisted of one fully plumaged and two immature males and four females. In the breeding season three birds—a male and two females—and occasionally only the pair, were met with. Their call note is very feeble, and can only be heard a few feet away. The nest is usually placed in a small, thorny bush within a foot of the ground, and one found on the 7th March contained a Cuckoo's egg similar to those found in the nests of *Glyciphila modesta*. Nesting takes place during the wet season.

♂, irides black, bill black, legs bluish-white. Stomach contents, insects. Total length, $4\frac{3}{4}$ inches.

Malurus coronatus. Purple-crowned Wren-Warbler.—Mr. M'Lennan first met with this fine, large *Malurus* on the Leichhardt River, 25 miles beyond Caloola Station, where it inhabited the cane-grass growing near the water's edge. This river may be regarded as marking its eastern range. It was common in the cane-grass and pandanus along the Gregory River. Its call note is very loud, and like that of *Sericornis frontalis* of southern parts. When he was standing still this bird came within 4 feet of Mr. M'Lennan, and showed no sign of fear.

♂, irides brown, bill black, legs light slate.

Malurus cruentatus. Red-backed Wren-Warbler.—Mr. M'Lennan obtained his first nest of this species at Cairns on the 1st December, 1909, where he found the birds rather plentiful. He next met with them at Sedan on 20th February, 1910, in a long Mitchell and cane-grass swamp. A male was secured in brown plumage with a crimson dorsal patch. These birds probably assume their full breeding dress in the spring, rear a brood, lose their livery, and then, with the revival of all vegetable and insect life which follows the summer rains, breed again in their ordinary brown dress. This male was found to have enlarged sexual organs. Irides blackish, bill dark brown, legs reddish-brown.

The accompanying females were found to be tending a young bird that had only recently left the nest. Another pair was found building a nest, which was afterwards deserted.

At Byromine, on the 10th April, Mr. M'Lennan was rather puzzled with these birds when he found them mated and nesting with both male and female alike in plain brown plumage. He found two nests containing eggs and secured the pair of birds from the second one. Both were brown.

♂ had one abnormally enlarged testicle. Irides brown, bill brown, legs brown. ♀, irides brown, bill and legs light brown. Stomach contents in both, small grasshoppers and other insects.

Another pair was found building, and specimens were secured: The breeding male was also in plain brown dress.

They were again noted at Cloncurry and on the Leichhardt, where they were very plentiful, and all brown, in June. Writing from Augustus Downs, on the Leichhardt, under date 4th July, Mr. M'Lennan states:—"One thing noticed regarding these birds is that the three lots that I found breeding were three pairs only—not a male and two or three females as with other species; but now I am finding them in small flocks." Until after this date Mr. M'Lennan was of opinion that the plain brown Wren-Warblers were a species apart from any other, in which the males were always brown. However, he changed his opinion at this camp, where he found these Wrens in large flocks, as many as 30 in some of them. From one of these flocks he shot two specimens, one of which had a few crimson feathers on the back and a few black ones round the eyes and on the head, showing that the birds were *M. cruentatus* changing their winter plumage for the early spring breeding.

♂, testes normal; irides brown, bill light brown, legs pale brown.

On 20th July, on the Gregory River, another male with changing plumage was shot. ♂, testes normal, iris brown, bill black, legs brownish-flesh colour.

They were last seen near Burketown on the 25th July, still in flocks.

At Cape York this species frequents the open pockets, and is never found in the scrub. Specimens were secured in January.

I have compared fully plumaged males from Cairns, Cape York, and the Gulf country, and can find little, if any, difference.

Artamus leucogaster. White-rumped Wood-Swallow.—Noted at Green Island and on a nest in a tree in the main street, Cairns, on 18th November, 1909; at Sedan in February, 1910, and frequently at Cape York. One nested in an old nest of *Chlamydera cerviniventris*, another in a cleft of a dead mangrove.

Artamus superciliosus. White-browed Wood-Swallow.—Only once seen—in the Gulf country, on the Gregory River, in July.

Artamus personatus. Masked Wood-Swallow.—First noted in the Gulf on 8th June, when on the Leichhardt road: On the 12th June a large flock passed the camp at sundown, flying north. Again seen on the Gregory River on 22nd July, 1910.

Great numbers of this migratory species appeared in western New South Wales early in August, 1910, and continued to arrive until well on into September. Very few, however, remained to nest.

Artamus melanops. Black-faced Wood-Swallow.—Frequently noted throughout the Gulf country. This species is not migratory.

Artamus minor. Little Wood-Swallow.—Fairly common throughout the Gulf country.

Colluricincla brunnea. Brown Shrike-Thrush. — Mr. M'Lennan collected two specimens in the Gulf country, both of which Mr. Mathews refers to this species. They differ very considerably from one another, and until a larger series of skins is examined and more observations made in a state of nature I would not consider the matter settled. Mr. North also refers both these to *C. brunnea*. They are fairly common in the Gulf country, where conditions favour their habits.

At Cape York there is one large *Colluricincla* and one small. The latter is easily placed as *C. rufigaster*. The former is in dispute.

Mr. North refers it also to *C. brunnea*, and states that it does not agree with the type of *C. superciliosa*, Masters, the latter bird having a broad white eyebrow and being very distinct from my specimens. Mr. Mathews refers my Cape York specimens to *C. superciliosa*. If that be correct, then the type skin must be abnormal, as my skins do not show any white eyebrow, or, at any rate, no very distinct one; and, again, the female of *C. brunnea* is supposed to have a white eyebrow. Mr. M'Lennan met with only the one species at Cape York in the course of two years, and it is not likely that he could overlook so conspicuous a bird if any other such existed there. Skins were obtained at Paira, Peak Point, and on the Jardine River, all of the same species, and several nests were found containing either young birds or eggs.

Colluricincla rufigaster. Rufous Shrike-Thrush.—Common in the scrubs at Cape York, where its nests are frequently found.

Grallina picata. Pied Grallina (Magpie-Lark).—Common throughout the Gulf country, but only occasional at Cape York.

Gymnorhina tibicen. Black-backed Magpie.—Common in the Gulf country. Not noted at Cape York. This Gulf bird is smaller than southern birds, and has been separated by Mr. Mathews under the sub-specific name *terra-regina* ("Reference-list," p. 372).

Cracticus quoyi. Black Butcher-Bird.—Common at Cape York, where their association with the Manucode, first noted by Mr. H. Barnard, has been amply confirmed by Mr. M'Lennan, as will be seen in the notes on the latter bird. Towards one another the attitude of these species seems to be one of armed neutrality, the Manucode finding a certain amount of protection from being in the neighbourhood of so warlike a bird, but at the same time keeping a watchful eye upon its own eggs or callow young when the ally is near.

Cracticus nigrogularis. Black-throated Butcher-Bird.—Common throughout the Gulf country. A fawn-coloured bird was frequently noted, probably one of the plumage changes towards maturity.

♂, irides brown, bill black at tip and rest horn colour, legs horn colour. Stomach contents, beetles and grasshoppers. ♂, juvenile, irides light brown, bill blackish, legs greenish-horn colour.

Cracticus mentalis. Black-backed Butcher-Bird.—Mr. M'Lennan found this small Butcher-Bird very numerous at Cape York between the 16-mile point on the telegraph line and the Jardine River, where several old nests were noted. Several nests were obtained by Mr. Wheatley on the Batavia.

♂, irides dark brown; bill, basal half light horn colour, rest black; legs greyish-black. ♀, irides dark brown; bill, basal half light horn colour, rest black; legs slaty colour. Stomach contents in both, beetles. Length in flesh, $9\frac{7}{8}$ inches.

Pachycephala melanura. Black-tailed Whistler.—When Mr. M'Lennan was on Cairncross Island, in July, 1911, he observed a yellow-breasted Whistler, which was probably this species.

Pachycephala falcata. Northern Whistler.—Common throughout the Gulf country and also at Cape York.

Neositta mortoni. Morton Tree-runner.—This is the common Sittella throughout the Gulf country, and will probably be found to be identical with *N. magnirostris* of Ingram, described from a cattle

station a little westward of the Gulf country. Two sets of eggs were taken by my nephew prior to Mr. M'Lennan's visit.

♂, irides yellow, bill yellow with black tip, legs yellow. Stomach contents, small beetles and other insects. ♀, similar in all respects to the male. ♂, juvenile, irides yellow; bill brown at tip, yellow at base; legs yellow.

Neositta striata. Striated Tree-runner.—This is the Cape York bird. It is more frequent down the telegraph line from the 16-mile point to the Jardine River, in the tall bloodwood and stringy-bark forest.

5th March, 1911.—“♂, testes enlarged, irides yellow; bill yellow, tip black; legs yellow. Stomach contents, small beetles and other insects.”

2nd May, 1911.—“♀, ovary and oviduct much enlarged; irides and eyelids bright yellow; bill yellow, tip black; legs bright sulphur-yellow.”

Climacteris melanura. Black-tailed Tree-creeper.—Numerous throughout the Gulf country, especially on river-flats of the Leichhardt, which are clothed in bloodwood, wattle, bauhinia, and silver box. A spring breeder.

♂, irides dark brown, bill and legs blackish-brown. Stomach contents, small beetles, ants, and other insects.

Zosterops albiventris. Pale-bellied White-eye.—A pair of these birds was secured on Cairncross Island. They were numerous there, and also on Wednesday Island, York Island, Darnley, and other of the Torres Strait islands. “When at anchor off York Island the singing of these birds seemed to come from some hundreds of throats.”

♂, testes normal; length, $4\frac{1}{8}$ inches; iris silvery-brown; upper mandible black, tip of lower mandible black, rest greyish-black; legs bluish-grey. Stomach contents, fruit juices and insects.

Zosterops gulliveri. Golden White-eye.—Numerous in the mangroves along the Norman River. One pair was obtained on the Leichhardt River, and another pair near Burketown.

♂, testes normal; irides yellowish-brown; bill, upper mandible brown, lower mandible horn colour; legs dark slate. Stomach contents, small insects.

Differs but little from *Z. lutea*.

Dicæum hirundinaceum. Mistletoe-Bird.—Common in the Gulf country and at Cape York.

Pardalotus rubricatus. Red-browed Pardalote.—Numerous throughout the Gulf country, and on the Jardine River, on the Cape York Peninsula.

When camped at Sedan several banks where they nested in company with *P. uropygialis* were examined. One contained five burrows of *P. rubricatus* and seven of *P. uropygialis*, another five of *P. uropygialis* and three of *P. rubricatus*. Still another contained 26 burrows, 18 being those of *P. uropygialis* and eight of *P. rubricatus*. The birds were at these burrows on the 10th February, but no completed clutches were found until the 25th March. On the Leichhardt a Red-browed Pardalote was flushed from its burrow, containing a nearly completed nest, on the 16th June. Both this species and *P. uropygialis* from the Gulf country are paler in colour than those from the Jardine River.

Pardalotus uropygialis. Chestnut-rumped Pardalote.—Numerous in the Gulf country and at the Jardine River.

Cyrtostomus frenatus. Sun-Bird.—Very plentiful at Cape York.

Melithreptus albugularis. White-throated Honey-eater.—First met with in the Gulf country at the Lorraine camp, on the Leichhardt River, on 3rd July, 1910. The call was a single piping whistle like that of a Tree-creeper.

♂, testes enlarged; irides reddish-brown; bare skin over the eye white, with a faint greenish tinge; bill black; legs olive-brown. Stomach contents, small insects.

This bird was again found at Cape York, but Mr. M'Lennan is of opinion that the bird from this locality shows points of difference. The note is different. Noted at Paira, Jardine River, and at Cape Grenville. Two skins were obtained at Paira, both females.

♀, ovary normal; irides orange-scarlet, eyelids white, bill black, legs fleshy-brown. Stomach contents, honey and small insects.

Melithreptus lætior. Golden-backed Honey-eater.—First observed in the Gulf country, at Sedan, where specimens were secured on 23rd October.

♂, testes enlarged; irides brown; skin round the eye bright green, with a tinge of yellow; bill black; legs brownish-yellow. Stomach contents, portions of flowers.

On the 25th of the same month this species was noted feeding fully fledged young. They were plentiful at this camp and at Cloncurry, where they were seen again feeding young birds on the 30th April.

In another specimen, secured on the Leichhardt River, the soft parts were as follows:—♂, testes enlarged; irides dark brown, naked skin above eye greenish-yellow, bill brownish-black; legs pale yellowish brown, feet lighter. Stomach contents, honey and insects.

On the 23rd July, on the Gregory River, about 20 miles from Burketown, this bird was found building, the nest being half-finished, placed in thick foliage at the end of a horizontal branch of a bloodwood, and about 15 feet from the ground. It appeared to be built of fine shreds of bark bound together with spider web and cocoons, and was suspended by the rim.

Myzomela sanguinolenta. Sanguineous Honey-eater.—At Cairns, on the 17th November, 1909, they were numerous in the mangroves.

Myzomela erythrocephala. Red-headed Honey-eater.—Noted at Cape York—very few in 1910-11, but became numerous afterwards. They also frequent the mangroves. In a male taken in March, which appears to be the breeding time, the soft parts are:—♂, testes enlarged; length, $4\frac{1}{8}$ inches; irides brown, bill black, legs dark slate. Stomach contents, honey and small insects.

Myzomela nigra. Black Honey-eater.—One specimen was obtained at Sedan. I had previously obtained skins from the neighbourhood of Cloncurry.

Myzomela pectoralis. Banded Honey-eater.—First met with on the Leichhardt River, 25 miles beyond Caloola Station, where a number were feeding in a patch of bloodwood. Three specimens were obtained on 16th June, 1910.

♂, testes enlarged; irides dark brown, bill black, legs dark slate. Stomach contents, honey, insects, and portions of bloodwood flowers.

♂, juvenile, bill dark brown, gape bright yellow, otherwise similar to the adult.

They were also noted at Cape York, on the Jardine River, and near Paira. In the latter locality they were feeding on the blossoms of the black tea-tree. One specimen was obtained here on 27th March, 1912.

♂, testes enlarged; length, $4\frac{7}{8}$ inches; irides reddish-brown, bill and legs black. Stomach contents, honey and portions of flowers.

Myzomela obscura. Dusky Honey-eater.—First seen in numbers at Cairns, and later on at Cape York, where they were very plentiful in the mangroves, scrub, and forest. These birds vary a good deal in size. One nest was found, on 14th May, 1912, containing two hard-set eggs.

♂, testes enlarged; irides brown, bill black, legs slate colour. Stomach contents, insects. Obtained 23rd February, 1911.

♀, ovary normal; iris light brown, bill brownish-black, legs lead colour. Stomach contents, honey and small insects. Obtained on 27th December, 1910.

Glyciphila fasciata. White-breasted Honey-eater.—Met with only on the Gregory River, at the Brook Hotel, 20 miles from Burketown, where they were found feeding in the blossoming tea-tree.

♂, testes small; irides light stone colour, bill brown, legs pale fleshy-brown.

Not seen at Cape York.

Glyciphila modesta Brown-backed Honey-eater.—A common Honey-eater at Cape York, where it is mostly found in the mangrove and tea-tree swamps, and in these it breeds freely from November until April. It is also of interest as it is usually the chosen foster-parent of a Cuckoo, presumably the local variety of the Brush-Cuckoo. The Cuckoo eggs found in this Honey-eater's nest are unlike those of the Brush-Cuckoo from southern Australia, and are like those described as the eggs of the Chestnut-breasted Cuckoo. The Chestnut-breasted Cuckoo is, however, an inhabitant of the tropical scrub, and not of the mangrove or tea-tree swamps, where this Honey-eater nests. In these swamps, however, the Brush-Cuckoo is fairly common, and no Cuckoo egg other than the one described has been found there that could be attributed to this Cuckoo.

Many nests of this Honey-eater were obtained containing a Cuckoo's egg, with either one or two eggs of the parent bird. Some contained two Cuckoo eggs; others were deserted nests containing a single Cuckoo egg. In one old nest a dead and decomposed young Cuckoo was found, too far gone to be recognizable. In one nest were found two not long hatched young birds, one of which was a Cuckoo. This nest Mr. M'Lennan was unable to visit again until after the young one had flown. In another nest, in which a brood had been reared, were the feathers of a young Cuckoo. These were gathered, but were lost in a subsequent scramble through scrub.

On one occasion a pair of *G. modesta* was seen chasing a Brush-Cuckoo out of the swamp.

From all this evidence one would naturally come to the conclusion that the Cuckoo eggs found in the nests of *G. modesta* were those of the Brush-Cuckoo, but it cannot be conclusively proved until the hatching of a young bird from one of the eggs is watched and its various stages of development noted.

Conopophila rufogularis. Rufous-breasted Honey-eater. — Very common in the Gulf country, frequenting the tea-tree, and building in the prickly acacia bushes at a few feet from the ground. Also very common on the box flats at the Sedan camp. Many nests were found here, in various stages of construction or containing eggs or young birds, during February and March. One pair was noted feeding a young Pallid Cuckoo. The female alone engages in the task of nest-building, the male accompanying her to and from the nest.

♀, ovary normal; irides olive, bill brownish-black, legs slate. Stomach contents, honey and small insects. 3rd July, 1910, on the Leichhardt.

Ptilotis notata. Yellow-spotted Honey-eater. — At Cape York this Honey-eater was numerous in the scrubs, but only occasional in the open forest or mangroves. It nests in the summer months, the nest being placed low down, and usually containing two eggs. One nest found in the scrub on the 7th February, 1911, contained two eggs of this Honey-eater and one Cuckoo egg similar to those found in the nests of *Glyciphila modesta*.

♀, ovary normal; irides dark grey, bill brownish-black, naked patch of skin at gape bright yellow, legs dark leaden-grey. Stomach contents, stems and seeds of berries.

Ptilotis gracilis. Lesser Yellow-spotted Honey-eater. — This small Honey-eater was plentiful at Cape York in the open forest, but only occasional in the scrub.

21st March, 1911. — ♂, testes normal; irides greyish-brown; upper mandible black, lower brownish-black, gape yellow; legs light slate. Stomach contents, small berries.

Ptilotis sonora. Singing Honey-eater. — Numerous in the Gulf country between the Leichhardt and Gregory Rivers.

29th June, 1910. — ♂, testes normal; irides brown, bill black, legs blackish. Stomach contents, insects.

Ptilotis versicolor. Varied Honey-eater. — This fine large Honey-eater, which bears a superficial resemblance to the Singing Honey-eater, inhabits the mangroves at Cape York, where its tuneful voice is frequently heard in the breeding season. They were plentiful during the season 1910-11, but hardly any were present in 1911-12. In the latter season, however, they were found to be plentiful in the mangroves along the south bank of the Escape River, in the mangroves on Bushy Island, near Cairncross Island, where a fully fledged young one was seen on 30th June, 1911, and on the Hannibal Islands. A fresh nest was found in the Macarthur Island mangroves, and the birds were plentiful on the Bird Islands. At Cape Grenville a nest was found in a small mangrove on 5th July, 1911, containing two half-fledged young birds, and not far away was a half-built nest of the same bird. Later on, on 17th July, a nest with two young birds almost ready to leave it was found on the second of the Bird Islands.

Ptilotis keartlandi. Kearthland Honey-eater. — First noted on the 21st April, 1910, on a turpentine and spinifex ridge at Courtenay's Creek, 3 miles from Cloncurry, and afterwards found to be very numerous in this class of country. Also frequently met with at Donaldson, on the Leichhardt, on stony ridges clothed in stunted trees and shrubs.

Ptilotis flavesceus. Yellow-tinted Honey-eater. — Common in the Gulf country, but not seen at Cape York. One pair was found

building a nest at Sedan, on the Cloncurry, on 8th March, 1910, but deserted it after completion. Another nest, containing small young birds, was found at Byromine on the 9th April; one on the Gregory River road, on the 17th July, containing one egg; and a fourth building near Burketown on the 23rd July.

Male, taken on 21st February—irides dark brown, bill blackish-brown, legs olive-brown. Stomach contents, bronze-green ants and small beetles.

Ptilotis flava. Yellow Honey-eater.—First noted at the Jardine River, Cape York, where they were common in the open forest and along the river and where their bold, loud, and clear whistling note was constantly heard.

♂, iris greyish-brown; upper mandible brownish-black, lower mandible dark brown; legs yellowish-olive. Stomach contents, honey and insects.

Ptilotis leilavalensis. Pallid Honey-eater.—Numerous throughout the Gulf country in eucalypts and tea-tree. One nest was found, containing eggs, on the 18th March. In habits they resemble closely *P. penicillata* of southern latitudes.

Ptilotis unicolor. White-gaped Honey-eater.—These fine, large Honey-eaters were first met with on the Leichhardt River beyond Caloola Station; thence onward to Burketown they became more numerous. They are very noisy birds, with a loud whistling note, and were never met with away from the tea-tree which borders the rivers.

♂, taken on 12th June—irides greyish-brown, bill black, naked patch of skin at base of upper mandible bright sulphur-yellow, legs dark slate. Stomach contained skins and seeds of the wild grape, portions of mistletoe flowers, and ladybird beetles. The female resembled the male in these particulars.

Trichodere cockerelli. Cockerell Honey-eater.—Mr. M'Lennan found this very beautiful Honey-eater to be fairly plentiful in the neighbourhood of the Jardine River, Cape York Peninsula, in March, April, and May, 1911. In December they were in numbers in the black tea-tree country between Paira and Peak Point, but disappeared within a month. In their habits they closely resemble the members of the genus *Glyciphila*, and their call is almost indistinguishable from that of *Stigmatops ocellaris*.

On the 24th April, 1911, one of these birds was found building its nest in the fork of a small tea-tree 2 feet from the ground at the edge of a swamp, the nest being composed of fine rootlets bound together with spiders' webs.

The first clutch of eggs was found on the 9th of May, 1911, the nest being 2 feet from the ground in a small tea-tree. Four old nests were found in the vicinity, and one containing two half-fledged young birds, in similar bushes, all at about 2 feet from the ground.

On the 10th May, 1911, another nest was found, again in a small tea-tree bush at about 18 inches from the ground. An old nest was near by in another bush. On the 15th a nest was found containing two young birds, and another pair of young birds that had just left the nest was seen, and one obtained for a skin.

In an adult male taken on the 12th March the soft parts were as follows:—♂, irides reddish-brown, bill black, naked skin at gape dark greenish-blue, legs dark slate. Stomach contents, honey and small

insects. ♀, juvenile, irides brown, bill black, naked skin at gape pale greenish-blue, legs slate. Stomach contents, honey only (26th April, 1911). ♀, fledgeling, taken on 15th May, 1911—irides brown; bill, upper mandible dark brown, lower light brown, gape yellow; legs lead colour. Stomach contents, insects.

Xanthotis filigera. Streak-naped Honey-eater.—Very common at Cape York, in scrub, open forest, and mangroves. They are silent birds, mainly insectivorous in their diet, and may often be seen searching the dead leaves on trees for insects. The first nest was found in course of construction in the mangroves at Paira on the 7th January, 1911; two eggs were afterwards laid. This nest was 10 feet from the ground, suspended by the rim from a horizontal fork of a small, bushy mangrove. It was composed outwardly of broad strips of melaleuca and swamp mahogany bark, lined with a few fine rootlets and fine strips of bark, and very compactly built, the sides being $\frac{1}{2}$ -inch in thickness, the bottom $\frac{3}{4}$ -inch. Another nest, containing eggs, was found on the 2nd February. This was 30 feet up in a bushy tree in the scrub. A third nest, found on the 12th February, was also about 30 feet up in a bushy scrub tree, and contained two half-fledged young. A fourth, found on the 11th April, contained one hard-set egg; this nest was 50 feet up in a bushy scrub tree.

♀, length in flesh, $7\frac{3}{4}$ inches; irides brown, bill black, legs leaden-blue. Stomach contents, insect remains.

Myzantha flavigula. Yellow-throated Miner.—Numerous in the Gulf country, where they were nesting in and after the wet season. Noted as a foster-parent of the Koel.

Entomyza harterti. Northern Blue-faced Honey-eater.—Numerous from 16 miles on Cape York telegraph line to the Jardine River, and at Lockerbie when the tea-tree is in bloom. This bird very closely resembles *E. cyanotis*, *E. albipennis* not being found on the Cape York Peninsula. Only one nest was found, near the Jardine River, in an old Babbler's nest; it contained two eggs only.

♀, irides silvery-cream colour; bare skin above eye pale greenish-blue, below the eye deep sky-blue; bill black, base of bill pale greenish-blue; legs pale slate. Stomach contents, honey and insects.

Tropidorhynchus argenteiceps. Silvery-crowned Friar-Bird.—At Cape York these birds were only noted on the western side of the Peninsula, where they were numerous in 1911 in the messmate and bloodwood forest country. The nest is usually placed high in one of these trees, and is a pendant one, somewhat smaller than that of the Helmeted Friar-Bird. Usual clutch, two.

♂, irides light brown, bare skin of head black, legs slaty-blue. Stomach contents, honey and insects.

Tropidorhynchus buceroides. Helmeted Friar-Bird.—Numerous all the year round in the forest country at Cape York, where they nest in the Moreton Bay ash trees in company with *Sphecotheres*, *Drongos*, and *Aplonis*, laying three to four eggs.

♀, iris dark orange, bill and naked skin of head black, legs dark leaden-grey.

Philemon sordidus. Little Friar-Bird.—Common in Gulf country and at Cape York in the more open country. One nest found on the Cloncurry River contained young birds in February; another, which had two eggs in it, was vigorously defended by the parent birds when Mr. M'Lennan attempted to examine it.

Colouring of soft parts in a Gulf specimen, 21st February, 1910—♂, irides brown, bare skin round eye greenish-lead colour, bill dark brown, legs lead colour. Stomach contents, seeds and small insects. In a Cape York bird these more nearly approached *P. citreogularis*.

♀, irides greyish-brown, bill black, bare skin of head dull leaden-blue, legs dark slate. Stomach contents, beetles and other insects. Taken on 6th December, 1910, at Paira.

Anthus australis. Australian Pipit (Ground-Lark).—Not noted at Cape York, but common throughout the Gulf country.

Mirafraga secunda. Lesser Bush-Lark.—Mr. M'Lennan first met with this bird at Sedan in February, 1910. He notes:—"It has a louder and more varied song than *M. horsfieldi*, and it is a pleasure to listen to it." They were evidently breeding, as he saw them carrying building material, and dissection of specimens confirmed this opinion. Although he spent many hours on several occasions in searching for the nest, he did not succeed in finding it. They were very numerous in some places on plains or grassy flats.

♂, irides light stone colour; bill brown on top, cream-coloured underneath. Stomach contents, grasshoppers and beetles. Taken at Sedan, on Cloncurry, 19th February, 1910.

♀, irides olive-brown; bill brown, upper mandible brownish-flesh colour; legs pale straw colour. Stomach contents, seeds.

A pair of eggs sent me some years ago bore a general resemblance to those of *M. horsfieldi*—had the same gloss, but were larger by about 2 mm. in both diameters.

Tæniopygia castanotis. Chestnut-eared Finch.—Very common throughout the Gulf country, but not seen at Cape York.

Stictoptera bichenovii. Banded Finch.—Many of these birds in the Gulf country. Several nests were found in and after the wet season, the usual clutch being four to six. The nests on the Cloncurry River were usually composed of fine rootlets and placed in the tea-tree.

At Augustus Downs, on the Leichhardt, they were building in the cane-grass. Here they were nesting freely in June. On the Gregory River they were still nesting in July.

Munia castaneothorax. Chestnut-breasted Finch.—Found only at Cape York, where they nest in the long grass growing on the small rocky islets near the mainland, seldom being found to nest on the mainland itself. On one small islet about a mile from Peak Point the nests were placed at from 6 inches to 2 feet from the ground. The growing grass is woven to form the outside of the nest, which is then lined with fine grass. Several nests just commenced showed the outer fabric only, and were green. Clutches of from four to seven eggs were found.

♂, irides brown, bill horn colour, legs dark slate. Stomach contents, grass seeds (17th February, 1911).

Munia pectoralis. White-breasted Finch.—First noted at Sedan, but found to be more plentiful near the ranges. They were also met with on the Leichhardt and Gregory Rivers.

♂, irides brown, bill horn colour, legs straw colour. Stomach contents, seeds.

Ægithya minor. Lesser Red-browed Finch.—This very distinct sub-specific form was met with only at Cape Grenville, where the birds were found nesting in July, 1911. One nest containing five eggs was found in a creeper-covered shrub growing on a sandy rise between

the beach and the mangroves; another, containing young birds, was placed in a small mangrove on the beach and at about 2 feet above high-water mark; and a third half-built one close by in another mangrove. One specimen was secured.

♀, length, $3\frac{1}{8}$ inches; iris reddish-orange; upper mandible crimson, culmen dark brown; lower mandible, tip and cutting edge crimson, the rest black; legs pale straw. Stomach contents, grass seeds.

Poephila hecki. Red-billed Grass-Finch.—Met with for the first time on the Leichhardt, 25 miles beyond Caloola Station, where a pair was found in attendance upon a nest containing four young birds, on 16th June, 1910. This nest was placed in a horizontal bushy limb of a bauhinia, 15 feet from the ground, and was composed of fine grass, lined with a few Galah feathers; it was 6 inches in depth and 8 inches long on the outside, 4 inches by 5 inches on the inside. The young were covered with pin feathers and grey down. Bill blackish, irides grey.

Adult ♂, irides dark orange, bill orange-scarlet, legs and feet bright red. Crop and gizzard contained grass seeds.

These birds became numerous as the Gregory River was approached, where several nests were found in small bauhinia trees at about 5 to 7 feet from the ground. On the Gregory River itself several nests were found in the pandanus; none contained more than four eggs.

Poephila personata. Masked Grass-Finch.—First noted on the Leichhardt River, 2 miles beyond Augustus Downs. On the Gregory River they were numerous.

♂, irides ruby-red, bill yellow, legs bright red. Stomach contents, grass seeds. ♀ similar.

Poephila gouldiæ. Gouldian Grass-Finch.—First observed on the Leichhardt River, 2 miles beyond Augustus Downs. Seven miles from the Leichhardt, on the Gregory River track, they came to a water-hole at night in numbers.

Neochmia phaeton. Crimson Finch.—Noted throughout the Gulf country, being more numerous along the Leichhardt and Gregory than in the vicinity of Cloncurry. Along those rivers it was found frequenting the cane-grass and pandanus, and many nests were found. They were bulky structures, composed of grass and lined with feathers.

♂, irides golden-brown, bill crimson, legs dark straw colour, Stomach contents, seeds. ♀, juvenile, irides grey, bill blackish, legs straw colour. Adult female similar to male.

Oriolus affinis. Northern Oriole.—Numerous on the Gregory River, but not so common in other parts of the Gulf country. Frequent at Cape York, where it was found in the open forest country. Its note differs considerably from that of its southern congener.

♂, irides light orange, bill brown, legs slate. Stomach contained beetles and other insects (Leichhardt River, 15th June, 1910).

♂, irides orange-red, bill blackish-brown, legs light slate. Stomach contents, caterpillars (Jardine River, 28th April, 1911).

Oriolus flavicinctus. Yellow Oriole.—A very common bird at Cape York, frequenting scrubs and mangroves, but preferring to nest in the open pockets, where it usually selects a small tree, the nest being generally placed at a height of from 5 to 20 feet from the ground. It also nests in the mangroves just above high-water mark, and

occasionally in the scrub. The nest is a pensile structure of bark, and as a rule one long streamer of bark of from 1 to 2 feet in length hangs from it. Nests were found from November to February. Two eggs form a clutch.

Sphecotheres flaviventris. Yellow-bellied Fig-Bird.—One of the commonest of birds at Cape York, where it nests high up, usually in a Moreton Bay ash, in company with the Helmeted Friar-Bird, *Drongo*, and *Calornis* (*Aplonis*).

Chibia bracteata. Spangled Drongo.—Found all the year round at Cape York, but not so numerous in the winter. They nest in company with other birds, in the open forest usually, but sometimes in the scrub.

Aplonis metallica. Shining Starling.—Numerous at Cape York from August until March. They usually come early in August, and soon take possession of their nesting-trees.

♂, irides scarlet, bill and legs black. Stomach contents, wild fruits.

Chlamydera maculata. Spotted Bower-Bird.—Met with at Sedan. Mr M'Lennan's note, made on 24th February, 1910, reads:—"Saw a bird in a thick bush. Could not get a clear look at it, so shot it; it proved to be a Bower-Bird. Its mate flew from a tree close by, and started to mimic all the birds of the district—Miner, Friar-Bird, Whistler, Magpie, Butcher-Bird, Red-throated Honey-eater—and ended with a marvellous imitation of a cat in a rage."

When at Cattle Creek, 50 miles west from Cloncurry, this note was made:—"While fixing up the horses I heard a Bower-Bird mimicking the following birds:—Black Cockatoo, Whistling-Eagle, Brown Hawk, Kite, Butcher-Bird, Black-faced Cuckoo-Shrike, Whistler, and Restless Flycatcher—all imitated to perfection; in fact, I was trying to locate the three first-named birds when I saw the Bower-Bird." They were numerous round this camp.

Chlamydera nuchalis. Great Bower-Bird.—Seen on the Gregory River and at the Brook Hotel, 20 miles from Burketown. They are considered to be a nuisance in the hotel garden, destroying the fruit, especially the grapes.

♂, irides brown, bill blackish-brown, legs olive. Stomach contained seeds and portions of green vegetable matter (wild figs)

Chlamydera orientalis. Queensland Bower-Bird.—Numerous at Lockerbie in 1910, but fewer in 1911. Their bowers are decorated with the shells of land-snails.

♂, length 13½ inches; irides brown, bill blackish-brown; legs olive-green, feet a darker shade. Stomach contents, wild fruits.

Chlamydera cerviniventris. Fawn-breasted Bower-Bird.—Fairly common at Cape York, but unevenly distributed. They were met with at Paira, Peak Point, and Somerset, on the Jardine River and Escape River, and at Cape Grenville. Many nests were found, but only one contained the much-coveted eggs. Seven bowers were noted at Cape York. Some had a platform of sticks in front of the bower, and one had a square platform, also of sticks, about 6 feet from the bower, raised 1½ inches from the ground. The only decorations about these bowers were bunches of green berries—no shells, flowers, or leaves were noted. Berries were on all the bowers, and on the platforms in front. One bower was below high-water mark, in the mangroves, and was flooded by the high tide every fortnight.

There was a shelly beach 3 yards away, but shells were never used for decoration, though so near at hand—always some kind of berry. When playing about the bowers the birds make a rustling noise with the throat.

♂, irides brown, bill black, legs greenish-olive. Stomach contents, berries. Jardine River (12th March, 1911). ♀, irides greyish-brown, bill black, legs slate colour. Stomach contents, seeds and skins of wild fruits and berries.

Ptiloris alberti. Albert Rifle-Bird.—This bird, although fairly common still in the Cape York scrubs, has suffered a great diminution in numbers, mainly through the depredations of scientific collectors. One man alone obtained over 70 skins. It is difficult to imagine why any museum or investigator should require so large a number. The number of skins taken for scientific purposes should be limited, and the large areas of scrub on this Peninsula should be made a sanctuary for the birds, else in a few years they will be a thing of the past, as well as many other rare and interesting species.

They keep to the scrub, where their ordinary call, two sharp whistles, is often heard. During the nesting season this call alters to three sharp whistles and a long, sonorous one to finish up with. They feed mostly on wild fruits of various kinds.

Phonygama gouldi. Trumpet-Bird (Manucode).—A fair number of these birds is to be found in the scrubs at Cape York. They seem to arrive early in August, and take their departure at the end of March, or early in April, when they gather together in flocks. Building as they do a frail nest high up in a scrub tree, it is a difficult matter to locate one through the tangle of vegetation overhead. The first nest found by Mr. M'Lennan proved rather a difficult proposition. After watching a pair for some time, on the 24th November, 1910, the male bird was seen to chase other birds from a certain tree, which was watched, when one of the birds returned to it with building material. The nest was soon located, at a height of about 90 feet from the ground. The bird was sitting on the nest on the 2nd December, and on the 5th the tree was climbed during a thunderstorm. "I thought my last hour had come. The limb I was on swayed 7 or 8 feet when the wind caught it; one flash of lightning rattled my nerves—it seemed so close; rain started to pelt down when I was descending the tree, and continued for the rest of the day. The nest contained two eggs."

Another nest, found on the 6th December, 1910, was 50 feet up at the top of a bushy tree; it contained a fully fledged young bird, which flew off and came to the ground. This young bird Mr. M'Lennan succeeded in rearing for several months, when it died. A third nest was found on the 2nd February, 1911, at the top of a tall, thin sapling, 60 feet from the ground; it contained two hard-set eggs.

After this, acting on Mr. Barnard's note that this bird's nest is usually in the vicinity of the nest of *Cracticus rufescens* (*quoyi*), Mr. M'Lennan was more successful.

On the 16th November, 1911, at Lockerbie, the following note was made:—"Searched through the scrub near the house, as I had frequently heard a Butcher-Bird calling there. I soon discovered its nest in a large fork of a leafless scrub tree; it contained four very pretty eggs. I had almost made up my mind to take them when I heard a Manucode call close by, so I came down and investigated. I soon located the nest in a bushy tree 50 yards from the Butcher-

Bird's nest. It appeared to be just ready for eggs, the Manucode sitting in a tree close by. On the 28th I went to the nest again. The bird was sitting, but flew off. As I approached the nest, one of the Butcher-Birds flew into a tree close by and the Manucode attacked it and drove it away, then returned to the nest and stayed there till I climbed to within a few feet of it. The nest was about 40 feet from the ground, and contained two eggs. On the 18th November, in a small blind pocket at the foot of the big hill, a Manucode was flushed from its nest in a big fig-tree at the edge of the scrub. This nest, which contained two eggs, was 70 feet from the ground. Heard a Butcher-Bird calling, and found its nest, containing three eggs, in a bushy tree 30 yards from the Manucode's. Crossed the hill to Tiera Pocket. Flushed a Butcher Bird from its nest in a big fig-tree at the edge of the scrub, but did not examine it. Heard a Manucode calling close by, but it was too late to search for its nest."

4th December, 1911.—"Went to Tiera Pocket, to Butcher-Bird's nest, and had another search for Manucode's nest, which I found in the bushy top of a small-leaved tree in thick scrub about 60 yards from the Butcher-Bird's; it contained two young birds just hatched. The nest was 40 feet from the ground. The Butcher-Bird's nest also contained small young birds."

21st November, 1911.—"Found a Butcher-Bird's nest containing small young birds in a big bloodwood. Had a search for Manucode's nest, and found one in some vines in a bushy tree at the edge of the scrub; it contained two eggs, and was 25 feet up and 40 yards from the Butcher-Bird's nest."

28th November, 1911.—"Went out along Gheedinia track. Heard a Manucode calling near Butcher-Bird's nest that I had found on the 14th November, and, after watching for some time, saw one of these birds fly into a rubber-tree about 50 yards from the Butcher-Bird's nest. In a few minutes its mate flew into the same tree with some building material. They were just starting a nest. I watched them for about half an hour, and twice in that period the male bird flew into the scrub and returned with a vine tendril and added it to the nest. The rest of the time he spent in an adjoining tree, uttering his peculiar call and preening his feathers. The female was exceedingly busy gathering her nesting material—aerial rootlets from the tree in which she was building—occasionally uttering a harsh croak in answer to her mate's more melodious call. This nest was afterwards deserted or removed.

The last nest of the season was found on the 4th December in the bushy top of a small-leaved tree in thick scrub about 60 yards from a Butcher-Bird's nest; it contained two newly-hatched young. The Butcher-Bird's nest also contained small young.

Corvus coronoides. Crow:—Noted occasionally in the Gulf country.

Corvus bennetti. Short-billed Crow.—This species predominates throughout the Gulf country, and is the usual foster-parent of the Channelbill. On a channel of the Gilliat River, near Sedan, 23 nests were found one morning containing either young Crows, young Channelbills, or Crows' eggs. The trees of other creeks on the plain were resorted to in the same way. This was in March, at the end of the wet season.

Corvus australis. Raven.—Frequently noted in the Gulf country. Two nests were found on the Leichhardt River in July, one partly constructed and the other containing fully fledged young.

Struthidea cinerea. Grey Jumper (Apostle-Bird).—First met with near Granada, on the Leichhardt River, where a flock of about 30 was disturbed and a specimen obtained. They were common thence onwards

♀, irides brown, with yellow outer ring; bill and legs black. Gizzard contained grasshoppers, seeds, and coarse sand. A number of parasites were found under the skin of the head and neck.

Descriptions of Two New Eggs.

BY HENRY L. WHITE, R.A.O.U. Belltrees (N.S.W.)

Neositta leucoptera, Gould (*subleucoptera*, Mathews).

Type.—Eggs two in number, roundish in shape, somewhat pointed towards one end; surface smooth and slightly glossy. Ground colour a very delicate greyish-white, over which are well-scattered blotches and spots of slaty-lilac and light and dark umber.

Dimensions in inches :—(a) 0.64×0.49 ; (b) 0.64×0.48 .

Birds, together with the eggs, were collected for me by Mr. H. G. Barnard, on the Macarthur River, Northern Territory, on 22nd September, 1913.

Co-type.—Eggs two in number, rather roundish-oval in shape, but decidedly more pointed at the one end than in the case of the type specimens. The markings are more confluent, and confined chiefly to the larger apex of each egg, where they form a well-defined zone.

Dimensions in inches :—(a) 0.67×0.50 ; (b) 0.66×0.50 .

Taken in same locality by Mr. H. G. Barnard, on 14th October, 1913. The nests were beautifully finished, cup-shaped, and composed of pieces of bark and cobweb neatly woven into the forks of Coolibah saplings, and placed about 10 feet up from the ground.

Pezoporus flaviventris, North.

Type.—Eggs three in number, roundish in shape, surface of shell very fine and smooth and possessing very little gloss. Colour pure white.

Dimensions in inches :—(a) 1.06×0.87 ; (b) 1.05×0.88 ; (c) 1.08×0.87 .

Collected by Mr. F. Lawson Whitlock, at Wilson's Inlet, South-West Australia, on 20th November, 1913. Nest consisted of a hollow under the lee of a prickly shrub, growing on a low ridge in a huge flat. Female flushed from nest. Eggs fresh.

Broinowski's "Birds of Australia."—This work, complete, in parts, unbound, price £5. Apply Editors, *The Emu*.

New Sub-species of Honey-eater.

By H. L. WHITE, R.A.O.U., BELLTREES (N.S.W.)

FROM Mr. H. G. Barnard, who is collecting for me on the Macarthur River, Northern Territory, I lately received skins of a Honey-eater which appears to be a new sub-species of *Entomophila picta*. I suggest the name of *Entomophila borealis*, or Northern Painted Honey-eater. As far as I can learn, the Painted Honey-eater has not hitherto been recorded north of New South Wales, from which State I have a series of skins.

The northern bird, as compared with the southern, is smaller generally, the comparative measurements being—

—			<i>E. picta</i> (according to A. J. North).*	<i>E. borealis</i> (in the flesh).
Length	..	..	6.3 inches.	6 inches.
Wing	..	..	3.5 inches.	3.3 inches.
Bill	..	..	.55 inches.	.5 inches.
Tarsus	..	..	.7 inches.	.6 inches.

* "Nests and Eggs of Birds," &c., vol. ii., p. 83.

It also differs in both sexes being darker above, the yellow on wings being more pronounced, and in having the wing feathers faintly tipped with white (this is more noticeable in the female). The white markings on the under part of tail feathers are much smaller, while the breast is purer white and less spotted.

The female is slightly lighter on the upper parts than the male; otherwise the colouring of the sexes is almost identical.

New Parrot for Australia and Description of Eggs.

By (Dr.) WM. MACGILLIVRAY, R.A.O.U., BROKEN HILL (N.S.W.)

BEFORE leaving Broken Hill for a trip to Cape York it was my pleasure to receive from Mr. W. M'Lennan three fine specimens, a male and two females, of an *Eclectus* taken on the Claudie River, which runs into Lloyd's Bay, on the Cape York Peninsula, where these birds are fairly common. So far as I can make out, this bird does not differ specifically from the Papuan bird, *E. pectoralis*, which is to be seen alive in the Adelaide Zoological Gardens.

Description of Eggs.—The clutch consists of two eggs, oval in shape, smooth, without lustre, and pitted, pure white, usually nest-stained. Long axis, 45 mm.; short axis, 35 mm. This set was taken on the Claudie River from a deciduous tree in the scrub at a height of over 70 feet. Average eggs are dumper and more pointed at the smaller end than are those of this first set.

Search for *Amytornis woodwardi* in the Northern Territory.

BY HARRY G. BARNARD, R.A.O.U.

ON Tuesday, 23/9/13, my companion and self left camp for some high sandstone ranges about 7 miles distant, and east of the junction of the Clyde River with the Macarthur, in the Northern Territory. The object of our quest was an *Amytornis*, or Grass-Wren, of which we had previously seen a single specimen, but which we had failed to obtain. As we intended to put in two days in the ranges, we carried provisions to last the time, also took camp mosquito-nets, as snakes are numerous in that class of country. We also carried a small-bore rifle and a 410-bore specimen gun, with plenty of ammunition, and skinning apparatus.

About 10 a.m. we arrived at a small pool under a high sandstone bluff. Here we established our headquarters, and, as it was still early, placed our swags on the sandstone shelves, and, taking the gun and rifle, spent several hours among the high sandstone bluffs and deep ravines, in which grew a few stunted bushes and great masses of "old man" spinifex or porcupine-grass. This grass is armed with sharp points, which penetrate one's clothing, also one's flesh, leaving a nasty stinging sensation. It is also covered with a sticky, waxy-like substance which blackens one's clothing and is very hard to remove. We returned to camp at mid-day, having seen nothing of the bird wanted. The only birds seen were a few Thrushes (*Colluricincla woodwardi*), "one old nest of which was seen placed in a round hole in the side of a cliff," a Honey-eater (*Ptilotis*) which is only found among the sandstone, and a small colony of Lavender-flanked Wrens (*Malurus dulcis*). After a short spell and lunch, we again set forth, this time following the ranges parallel with the Macarthur River; after going about 3 miles through very rough country we struck across to the river. We had seen no sign of the bird we were after, but found an old nest, placed on the top of a bunch of spinifex, which undoubtedly belonged to an *Amytornis*. On reaching the river we flushed a Winking Owl (*Ninox connivens*) from a hollow high up in a large melaleuca, and a clutch of two eggs was obtained. Tired of mountain climbing, we followed the river till opposite the camp, which we reached towards evening, weary and very disappointed with the day's work. After supper we rigged our nets, and, as it became dark, crawled beneath them. The night, however, proved very chilly and the ground hard, and long before morning we crept out and gathered what sticks we could find in the dark. After lighting a fire we lay beside it, waiting for dawn, and listening to the rock-wallabies, which kept hopping about on the rocks, wondering, no doubt, what strange beings had taken possession of their drinking quarters.

At the first sign of dawn the quart-pots were on the fire, and, after a hasty breakfast, we rolled up our swags, and, taking them

with us, made for some high ranges on the opposite side of the river and the place where we had seen the *Amytornis* on a previous occasion. After crossing the river we made for a pool of water about a mile from the river and on the top of the range. In crossing a low spur at the foot of a very high wall of rock a pair of *Amytornis* suddenly darted from under a rock close in front of us, and instantly disappeared among a mass of rocks. Our swags were dropped, and, creeping quietly forward with the gun ready, I gained the rocks, only to see one bird dart from rock to rock with such speed that it was impossible to get a shot, and in a few seconds it had gained the bluff, which was fully 50 feet high, and with a succession of short flights and hops quickly reached the top, over which it disappeared. I now turned my attention to the other bird, which had reappeared further down the spur. It made for the bluff. After much difficulty with rocks, &c., a shot brought the bird down. We were quickly on the spot, and for some time searched in vain; at last, when nearly giving up in despair, I climbed to the ledge of rock above our heads, and saw the bird wedged into a crack. In trying to get my hand in I touched the bird, which quickly fluttered out of the crack lower down and on to a rock close to my companion, who promptly caught it. Making our way to where we had left our swags, I left my companion on watch to see whether the other bird returned to its mate, and with some difficulty scaled the bluff. The top was fairly flat, and I searched for some time without result. In one place was a deep depression down which water evidently pours during the wet season, probably coming out again at some spot at the foot of the bluff. This depression had a few small trees growing in it, the tops of which just reached the surface, causing it to be dark within. In climbing down I disturbed a pair of Boobook Owls roosting in a shrub at the bottom; probably they nest in the hollows of the sandstone. Continuing my search for a quarter of a mile, I climbed down to a lower shelf of rock, and watched a family of *Malurus dulcis* feeding among the shrubs and spinifex below me. Several "Sandstone" Thrushes were creeping among the rocks like rats. I thought that if any specimens of *Amytornis* were about they would be feeding with the other birds. For about 10 minutes I remained still, watching the birds, when suddenly an *Amytornis* hopped on to a rock close to me. I fired at once, killing it. I kept quiet for a while, hoping that others would show out, but as none appeared I climbed down and secured the dead bird. Hearing a quick "chirp" behind, and turning quickly, I saw another bird hop on to a rock, and, firing before it could get away, killed it also. I now followed the Thrushes and *Maluri* lower down, and, after watching them for some time, saw three more *Amytornis* feeding among the rocks. I now returned to my companion, and we again shouldered our swags and made for the water.

The quart-pot was now boiled, and after a pannikin of tea I

proceeded to convert the dead birds into specimens. Great numbers of Plumed-Pigeons (*Lophophaps plumifera*) come to these water-holes to drink, but very few other birds except the *Ptilotis*. While hunting among these sandstone bluffs we came across several examples of so-called paintings by the blacks, but they were all of the same character—namely, hands and the arm as far as the elbow. Some of these paintings were out of our reach, and had evidently been done when the lower stone was far higher than it is at the present day. After dissecting the specimens (which were all males), and turning them into skins, we had lunch, and then commenced a long tramp homewards, reaching there just before sundown. A dip in the river and we were ready for supper, and shortly afterwards turned in for a needed night's repose.

The R.A.O.U. "Check-list."

SOME APPRECIATIONS.

QUEENSLAND MUSEUM,

Brisbane, 30/9/13.

The Hon. Secretary, Royal Australasian Ornithologists' Union.

DEAR SIR,—At the last meeting of the Brisbane Field Naturalists' Club appreciative comment was made by several members on the "Official Check-list of the Birds of Australia," as published as a supplement to *The Emu* in January last. After discussion, it was unanimously resolved that the R.A.O.U. be heartily congratulated on its endeavours to protect time-honoured names of Australian birds, and its decision to adhere to the simpler form of nomenclature. As naturalists and bird-lovers, the members of the Club are gratified at the stand the Union has taken in this important matter.—On behalf of the Club, we are, yours very sincerely,

(Signed) H. A. LONGMAN, President.

(Signed) C. T. WHITE, Hon. Secretary.

Mr. Tom Carter, M.B.O.U., Western Australia, states:—

"Please accept my best congratulations upon having completed a work so useful as the 'Check-list.' I am indeed much pleased that binomials have been retained and that the law of priority has not been carried to excess. There are many ornithologists of high standing in England who are strongly protesting against the trinomial system, the hair-splitting of species, and the great confusion that is being caused by the extreme use (or, rather, abuse) of the law of priority. Personally, I fear that there will never be fixity of nomenclature. There will always be persons wanting to differ from the rest. Sooner than accept trinomials, I would give up ornithology altogether. I desire that my hobby

be a pleasure to me and not a laborious task."—Wensleydale, Broome Hill, 12/5/13.

Mr. Gerald F. Hill, F.E.S., Government Entomologist, Northern Territory, states:—

"The 'Check-list' came to hand last mail, but I regret to say I have not had time for more than a glance at it. However, I am satisfied it is what has been badly wanted, and will put hope into those who, like myself, found the burden of ornithology getting too weighty. I felt that I would have to give up the study or fall behind, as I could not devote the time necessary to keep abreast of things.

"May I offer the members of the committee my congratulations on bringing out such a work as the 'Official Check-list'? It has been a great undertaking, but I feel sure you have won the thanks of the vast majority of ornithologists. I, for one, feel pleased that the burden of the trinomial system has been spared us who have not the same facilities as city folk for keeping up to date in study." Darwin, 25/4/13.

Mr. Frank S. Smith, Victoria, a writer on popular ornithology, states:—

"From the point of view of the ordinary bird-lover the 'Check-list' seems to be a splendid piece of work. All ornithologists will feel much obliged to you and your committee for your labour of love.

"I feel convinced that you are correct about the trinomial business and the eternal splitting of species; also about priority of nomenclature. I am certain some authorities have split species up far too much, and have raised the priority business to a fetish.

"Your list seemed to me to be so altogether admirable (and workable) that I thought it right to let you know my opinion." Noorat, 29/3/13.

Later:—"I am more and more enamoured of the 'Check-list' the more I use it. I am sure that even your few opponents will gradually come round."

The Editors of "The Emu."

SIRS,—On behalf of the 50,000 members of the Gould League of Bird Lovers of Victoria, and the almost equal number of Gould League Bird Lovers of the other States of the Commonwealth, I desire to thank the R.A.O.U. for the timely issue of the "Official Check-list of the Birds of Australia." It provides something definite at this period of uncertainty and research. The whole-hearted diligence of Mr. Gregory M. Mathews in his successful investigations of the literature of the past has revealed so much of interest and value that his "Reference-list," published less than two years ago, is already obsolete. He has announced in the *Austral Avian Record* of 23rd October, 1913, the issue of "A New List of the Birds of Australia." As Mr. Mathews is still

in the midst of his researches on the birds of Australia for his great work of that name, the "New List" will probably become obsolete also before finality is reached.

"The British Museum Catalogue," Sharpe's "Hand-list of Birds," Mathews' "Hand-list of the Birds of Australasia" (1908), and Mathews' "Reference-list to the Birds of Australia" (1912) have already been superseded for Australian birds. The "New List" will probably follow suit. Meanwhile, the "Official Check-list" will prove a safe anchor for bird lovers.

A student of ornithology is at present bewildered by the many new names—generic, specific, and sub-specific. Mr. Mathews, a few months ago, proposed to "lump genera." Now he is splitting genera. A paper in a late *Austral Avian Record* contains no less than twenty-seven new generic names for Australian birds.

This turmoil and uncertainty will apparently continue for some time, so that it is fortunate that the "Official Check-list" is at hand for those who are more interested in birds than in disputes as to names. Such disputes, indeed, seem almost incapable of early settlement, for Mr. Mathews has refused to recognize a certain ruling of the International Committee for Zoological Nomenclature concerning the recognition of Brisson's genera.

When the difficulties concerning names have been settled, it will be an easy matter to bring out a second edition of the "Official Check-list." It might be noted, in this connection, that it has been found necessary to issue a third edition of the "Check-list of North American Birds."

One point that will be appreciated by nature lovers, and the many teachers who are compelled to deal with birds in the course of their nature study work, is promised by Mr. Mathews for his "New List." He intends to "include all the sub-species hitherto named, grouped together under a binomial species-name." Australian children are advancing rapidly in knowledge and love of the birds of their school locality; but there is little possibility of naming sub-species in a field study of living birds in a restricted area. The sub-specific name is unnecessary and is a hindrance in our nature study work.

In Australia, a land practically devoid of natural barriers, birds change ground so often and to such remote places that sub-species have not been often designated. In a season of abundant rain the "Central Desert" is teeming with animal life. During a dry season, animals, especially birds, are driven into more favourable regions. This tends to a breaking down of the isolation so necessary for the evolution of species and even sub-species. The "Official Check-list" was drawn up by men who understand Australian conditions.

Many bird lovers have been driven to threaten to abandon their favourite study by the needless splitting of genera, species, and sub-species, and the endless alteration of names. The "Official Check-list" has reassured such, and will serve them until the way is clear for the issue of a second edition.

Meanwhile, the tens of thousands of Gould League Bird Lovers are thankful to the Union for the "Official Check-list." They at least can pursue their desire to study the interesting and varied avifauna of their native or adopted land.—I am, &c.,

J. A. LEACH, D.Sc.,

Organizing Inspector of Nature Study, and Hon. Sec. Gould
League of Bird Lovers of Victoria.

Education Department, Melbourne,
22nd December, 1913.

Correspondence.

FURTHER ON R.A.O.U. "CHECK-LIST."

To the Editors of "The Emu."

SIRS,—My attention has been drawn to the following statement by Captain S. A. White in a letter on this subject appearing in the last issue of your journal:—"Mr. Milligan told us at the session [Launceston session] all about the American 'Check-list' falling to pieces through trinomials, or, in his words, '*trinomials were pulling it to pieces with their own weight*,' and that Mr. Ogilvie-Grant, of England, would not use trinomials."

I had determined not to pursue the correspondence on this subject any farther, but as the statement quoted is both fallacious and mischievous, I cannot allow it to pass uncontradicted. In the first place I do not, when speaking or writing, employ confused metaphors of the nature indicated by the italicized words, and, secondly, I had not, at the time of the session, any knowledge of the home working of the American "Check-list," except in the one particular after appearing. In any event, how could the use of trinomials or binomials pull a *Check-list* to pieces!

I think that Captain White is unconsciously attributing to me the language and opinions of the late Dr. Bowdler Sharpe and Mr. Ogilvie-Grant, as the former appear in the R.A.O.U. "Check-list" report which I read at the session. They are as follows:—"I consider that the burden imposed on zoologists who follow this method [trinomials] for the naming of their specimens will become too heavy, and *that the system will fall by its own weight*" (Bowdler Sharpe). "On the whole, I see no useful object in using trinomials; in ninety cases out of a hundred it does not help one to identify a bird—often the contrary" (W. R. Ogilvie-Grant).

Or, probably, Captain White is confusing what I was charged to say in support of that portion of the R.A.O.U. "Check-list" report which stated that a recent practical application of the trinomial system to Australian ornithology resulted in raising the number of species and sub-species from 800 to 1,500. The tenor of my

remarks in that connection was that American ornithologists also were not wholly in agreement in regard to the wholesale multiplication of sub-species, and I cited a very able article appearing in *The Auk*,* written by Mr. Joseph Grinnell, Museum of Vertebrate Zoology, California, who in summarizing at the end of his article declared that the present "Check-list" [American] was unsatisfactory to both the amateur and the specialist in respect to the sub-species problem, and further suggested that a new "Check-list," *with sub-species omitted altogether*, would be hailed with appreciation by the great majority of bird-students.

The Auk containing the article under notice was handed to me by the convener of our "Check-list" Committee on the point of my leaving for Tasmania to attend the Launceston session, with instructions to cite it as above, and I carried out my instructions faithfully.

I am at a loss to understand why Captain White introduced this phase of the matter at all, as it had nothing to do with the matters in issue between him and me.—I am, &c.,

Melbourne, 30th Dec., 1913.

ALEXR. WM. MILLIGAN.

The Editors of "The Emu."

SIRS,—In your number for October (*ante*, p. 103) of this year you credit me with saying, in my letter *re* the R.A.O.U. "Check-list," that "I will mix King Island birds with specimens from the mainland." This should be Kangaroo Island. It may have been my fault for most likely I have written "K.I.," which we South Australians have a habit of doing for Kangaroo Island.—I am, &c.,

Fulham (S.A.), 24/10/13.

S. A. WHITE.

Stray Feathers.

Double Clutch of Butcher-Bird's Eggs.—I lately received a curiosity in the shape of a seven-egg clutch of *Cracticus destructor*. The eggs were taken by a boy attending the Public School at Seaham, N.S.W., the teacher being Mr. S. A. Hanscombe, R.A.O.U., one of the best known writers upon ornithological matters in the Education Department of New South Wales. Mr. Hanscombe states that the clutch is *bona fide*, and that the nest and eggs were photographed *in situ* by him. The eggs are apparently laid by two birds, four of them being much larger and slightly different in shade and markings from the rest. The Butcher-Bird is so pugnacious that the fact of two females laying in one nest is most unusual, and hitherto unnoticed by me.—H. L. WHITE. Belltrees (N.S.W.), 30/11/13.

* Vol. xxix., pp. 561 to 565 (Oct., 1912).

Freak Colours of *Rhipidura tricolor*.—For three successive seasons a neighbour has sent me young white birds of the Black-and-White Fantail—rough skins on two occasions, and a live bird on the third. Becoming interested, I obtained some information from him. All the young mentioned appear to have been the progeny of the same birds, which built close to the house, and are normal in colour. They have been under observation for three years, in which time four clutches were reared—two white birds only on three occasions, the fourth clutch consisting of two each white and normal. None of the white birds appears to have lived long after leaving the nest, though during last winter I noticed a pure white one within four miles of my neighbour's house. In some of the white birds a darker shade was observable where the black usually exists. —H. L. WHITE. Belltrees (N.S.W.), 30/II/13.

Notes and Notices.

The late Dr. P. L. Selater, F.R.S. — Owing to unavoidably restricted space, a notice, with portrait, of this late distinguished ornithologist is held over until the next issue of *The Emu*.

A Correction.—In vol. xiii., page 100, of *The Emu*, under the heading "Charcoal in Finches' Nests," I made an error which I wish to rectify. The fact of charcoal being placed in the nests of *Poephila personata* was previously recorded by Mr. G. F. Hill (vol. x., page 289, of *The Emu*). My friend Mr. T. P. Austin, of Cobborah, N.S.W., drew attention to the mistake, he having received a clutch of eggs from me, the data mentioning the fact of charcoal being found in the nest. At the time of writing the note for *The Emu* I was in the midst of shearing, and I presume that my wits must have been "wool-gathering."—H. L. WHITE. Belltrees (N.S.W.), 30/II/13.

Charcoal in Finches' Nests.—In connection with the foregoing "Correction," Mr. G. F. Hill, Darwin, sends the following note, which was accompanied by a photograph of the Finch's nest, *in situ*, in scrub:—"Although this habit is common, if not general, in the species, I do not think it occurs in any other nesting in Northern Territory or North-West Australia. The large size of the pieces of charcoal, 'about the size of the eggs,' is somewhat unusual, I think. The charcoal is generally in the form of powder and small pieces about the size of grains of hemp seed. The habit is not confined to nests built on the ground, but has been observed in nests built in bushes in North-West Australia, also in bushes and on Termites' nests near Roper River, Northern Territory. Since some field notes on the situations chosen by *Poephila personata* for nesting were published in *The Emu* (vol. xii., Part 4, page 260), I have had some opportunities for observing their nesting habits further north (about 20 miles south of Darwin,

Northern Territory), where I find that no partiality is shown for the vicinity of Termites' nests. Records of some 15 nests show that all contained charcoal, and were built on the ground or on tussocks of grass, generally on dry stringy-bark and woolly-butt ridges."

Avium Paradiseum.—The following extract is from a letter dated Cape York, 25/11/13, by Dr. Wm. Macgillivray, one of the vice-presidents, R.A.O.U. :—

"No rain yet, and there will not be any general breeding until the wet season commences. It is unusually dry, and the whole place shows the effects of it, even the scrubs. Birds build their nests only to pull them to pieces again or to desert them. We have taken several nests of *Eclectus*,* but cannot find that of *Pseudopsittacus*.† I have a Honey-eater which is, I think, entirely new. It is small, and lives in the midst of the scrubs. The other day, for a moment or two, I saw a bird like a Regent-Bird, but it dived into the scrub and was gone. I have not seen it since. We have not been into the mountains yet. They are covered with scrub, and stretch for 40 miles, and all well watered. It will take a generation of field naturalists to find all their wealth. There is another Parrot near here, but we have not come across it yet—a black one. *Pseudopsittacus* and *Eclectus* are calling now—one from the opposite side of the creek, where there is a nesting-tree, the other from a food tree just below our camp.

"The scenery along the river here is very beautiful, the scrub overhanging the banks, and a plant with huge palm-like fronds, 40 to 50 feet in length, springing from a common base, grows frequently in clumps in the mud at the water's edge. You may tell any botanical friend that we found a new hoyia, each floret being as large as a half-crown piece, and of a beautiful and delicately-tinted purple hue. When the tide comes up in the evening the surface of the water is strewn with large yellow hibiscus-like blooms of a tree which overhangs the stream; these fade into orange and red, and give the stream a gorgeous appearance. There are drawbacks, the chief of which is the want of rain, an occasional snake in our beds, and the having to bathe in a bucket instead of a swim in the creek, in deference to the appetite of *Crocodilus porosus*. In spite of all, however, existence here is very pleasant, and it is glorious to wake in the morning and hear the multitudinous voices of the birds. The chorus was a babel at first, but the species are sorting themselves out now as our ears become educated to their calls."

"Nests and Eggs of Australian Birds" (Campbell). — This important work, although out of print, retains its value. In nomenclature the names of the birds mostly accord with those on the newly adopted "Check-list" of the R.A.O.U. Price per copy (in two handsome vols.), £3 10s., the last offer at so low a figure for the few reserved copies. Apply Editors, *The Emu*.

* See *ante*, p. 187.

† See *ante*, p. 105.

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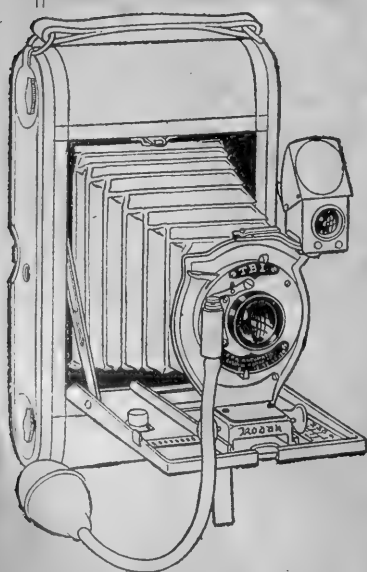
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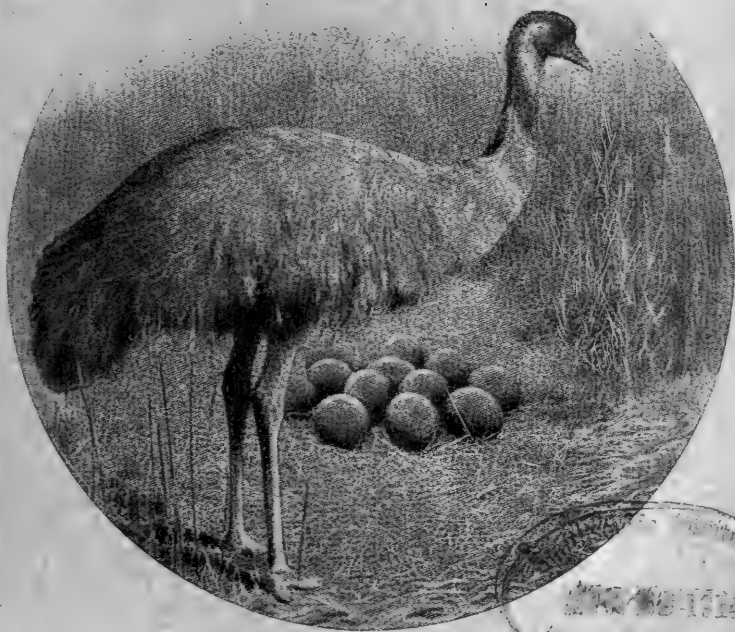
APRIL, 1914.

[Part 4.]

The Emu

A Quarterly Magazine to popularize the Study and Protection
of Native Birds.

Official Organ of the ROYAL AUSTRALASIAN ORNITHOLOGISTS' UNION.



Editors { A. J. CAMPBELL, Col. Mem. B.O.U.
CHARLES BARRETT.

Melbourne:

WALKER, MAY & CO., PRINTERS, 25 MACKILLOP STREET.

EUROPEAN AGENTS:

WITHERBY & CO., 326 HIGH HOLBORN, LONDON.

1914.

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CONTENTS - APRIL, 1914.

(The author of each article is responsible for the facts recorded therein, and any deductions he may draw.)

	PAGE
FIELD NOTES ON THE SPOTLESS CRAKE (PORZANA IMMACULATA). By (Miss) J. A. Fletcher, <i>Springfield (Tas.)</i>	197
NOTES ON THE SPOTLESS CRAKE AND WESTERN GROUND-PARROT. By F. Lawson Whitlock, <i>R.A.O.U., Chiltern, Tudor Siding, Denmark Line (W.A.)</i>	202
BIRDS OF THE BRUNETTE DOWNS (N.T.) By Harry G. Barnard, <i>R.A.O.U.</i>	205
SEARCH FOR EGGS OF COLLURICINCLA WOODWARDI. By Harry G. <i>Barnard, R.A.O.U.</i>	210
A VISIT TO THE GOSFORD SCRUBS. By Sidney Wm. Jackson, <i>R.A.O.U., Chatswood (N.S.W.)</i>	212
STRAY FEATHERS.—Eagles, 214; Eggs of <i>Munia pectoralis</i> , 215; Frogmouth and Boobook Owl, 215; Owlet-Nightjar Nestlings, 216; <i>Ieipoa ocellata</i> —Successful Breeding in Captivity, 217.	
FROM MAGAZINES, &C.—"Australian Nature Stories for Children," 218; Birds of Melville Island, 219; A New Journal, 219; Penguins of the Antarctic, 220.	
REVIEWS	225
CORRESPONDENCE	227
ABOUT MEMBERS	227
OBITUARY NOTICE	228
NOTES AND NOTICES	233
PUBLICATIONS RECEIVED	235

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The Emu

Official Organ of the Royal Australasian Ornithologists' Union.

"Birds of a feather."

VOL. XIII.]

1ST APRIL, 1914:

[PART 4.

Field Notes on the Spotless Crake (*Porzana immaculata*).

BY (MISS) J. A. FLETCHER, SPRINGFIELD (TAS.)

IN a paper on the Lewin Rail (*Hypotaenidia brachyopus*) published in *The Emu*, July, 1913, I expressed a hope that during the 1913 season I might glean some facts regarding the life-history of that little-known bird, the Spotless Crake. My wish has been fulfilled; I have been able to make a careful study of the bird, which is known locally as the "Little Native-Hen" and "Motor-car-Bird." Owing to the nature of the locality frequented by the Crakes, this success has been achieved at the cost of much fatigue and discomfort. In most of these excursions I have been accompanied by my sister or my scout, Miss Lowther, both of whom have ably assisted me.

So constantly have I observed the Crakes this season that I cannot understand why they were not seen in the previous year. However, the seasons probably have something to do with the movements of the birds. Last winter was dry, and the Lewin Rails nested early in July—seven weeks sooner than usual. The comparative dryness may have sent the Crakes out of their usual quarters. Then we had record rains during August and September, which ensured a heavy growth in the swamps, and, doubtless, a full food supply. This would cause the birds to nest freely.

Last season I found in the school swamp small nests which puzzled me. From the middle of August that locality was well watched—not by going in and disturbing the rushes, but by listening to sounds and watching the birds. Long, wide open toe-marks on the sand or mud, and channels, showed that the "Tabuan" Crake was present. By degrees I learned that these birds preferred the flowing water in a swamp, and not the deeper and swifter water of the larger creeks, nor that of a pond. The cover was excellent, though by December many of the smaller streams were dry, and the Crakes retreated to the deeper creeks. Early morning and the evening are the chief feeding times. A pair of Crakes appears to keep together all the year, and also to its own feeding area. The Crakes are particularly fond of water-courses that are overgrown with water-cress or native musk. The

cross is often torn about, but I do not know whether the birds eat it or only search through it for the creatures that it harbours. I have found pieces of reeds pulled up and the ends gone; evidently the Crakes like the soft white part at the base. Under damp herbage and among rotting grass a species of "hopper" lives. It is similar to the sand-hopper of the seashore, and I daresay all the *Rallinæ* eat it.

Owing to the denseness of their habitat the birds are seldom seen, but may be occasionally surprised, and if pressed too closely will sometimes fly a short distance just over the top of the grass, and then drop down. More often they crouch in the grassy tangle, remaining motionless at the base of a tussock. My sister opened a tussock, and when pulling up the dead matted strands was surprised to see the brown back of the bird. Once I saw a Crane sitting on a fallen stick in the water; but it soon noticed me, and darted into the rushes. The Spotless Crane has a variety of calls, some of which are peculiar. One, uttered when the bird is alarmed, resembles the growl of an angry cat. A warning call to one another, if the mates be separated, is similar to the noise made by a sitting hen when a hand is placed under her. The Crakes make this noise if the rushes or logs are struck with a stick. One bird replies with the low growl. They approach each other as they reply, and it is interesting to hear the contented chuckle when they meet. Another call is like the sound made by a motor-cycle as its engine begins to work. When feeding quietly, the birds utter pretty murmuring sounds, which remind the listener of air and water escaping from a bottle. These notes are also used to call the little ones to follow their parents.

Early one morning I was endeavouring to discover the nest of a pair of Crakes. I knew that the birds were present, as they sounded the alarm when I struck the rushes and reeds with a stick; but after I entered the swamp no answer was given. After a little while I became aware that the birds were behind me, and "talking" to themselves. Thus they followed wherever I searched. Not a glimpse could I get of them, but while I hunted the bubbling chatter continued. The swamps here are boggy depressions between rises. In some the footing under the water is fair; in others very muddy. They are, in most cases, densely matted with reeds (*Juncus pallidus* and *Juncus pauciflorus*), also the common sword or cutting grass (*Carex paniculata*) and meadow fescue. Wild musk, peppermint (*Mentha viridis*), and the water grass (*Glyceria fluitans*) choke the channels and overrun every spare space.

At the beginning of the season much time was devoted to searching under the drooping tussocks, but several small nests found towards the end of August showed that this was useless. Strangely enough, the first nest of the Spotless Crane discovered was in the school swamp, a few yards from the playground, and so close that I often heard the alarm call when the birds were startled by the noise of windows opening. Once the "Squeak



Home of the Spotless Crane, Springfield, Tasmania.

FROM A PHOTO. BY (MISS) J. A. FLETCHER.

squeak" of a lost "Tabuan" chick and the reply of the mother were heard in the school. After the scholars had gone, I walked to the edge of the swamp, and from near the crossing-place came the sounds of the family. I slipped down quietly, but they were too quick. All I saw was discoloured water and footprints in the muddy edge of the open pool. A few feathers floated on the water, and an alarm rang out. On the 23rd August four tiny nests were found in the haunt of the above pair. Each was placed low down in the heart of a sword-grass tussock. The nests measured $1\frac{1}{2}$ inches across and 1 inch in depth, and were made of pieces of soft grass woven around. Three were in a radius of a few yards, the fourth some distance away. A slight track led to one. They were untouched when looked at a week later. On 6th September the fourth nest had been moved completely, the others were neglected, and a fresh one was found near the three. A week later another nest was discovered by my sister. This was placed 2 feet from the ground, in sword-grass, on the edge of the running stream, and a few yards from the bank. Some strands were bent over for a cover, and a staging led down to the water. This nest was left until the 21st September. As we approached on that date we heard the sound of the bird jumping off the nest. No chance of seeing her in that tangle. My sister peeped, and called out excitedly, "Three eggs!" At last we had succeeded! Though the Crake's eggs were warm I left them, to see if three constituted the full clutch. Two days passed, and, as no more eggs were laid, I took the clutch. The bird must have been brooding for four or five days. Nest measured 5 inches outside, 3 inches inside, $1\frac{1}{2}$ inches deep. It was made of short pieces of sword-grass, with strands of same bent over for a cover. The slight platform was composed of loose ends of the same material. The eggs are somewhat lighter than those figured in A. J. Campbell's "Nests and Eggs." They are light greyish-white, with a suggestion of green in the ground colour, freckled with chestnut; at the larger end the spots accumulate and form a brownish cap. The dimensions of the three eggs are as follows:— $1\frac{1}{4}$ inches \times $\frac{9}{10}$ inch, $1\frac{1}{4}$ inches \times $\frac{1}{20}$ inch, $1\frac{1}{5}$ inches \times $\frac{9}{10}$ inch.

Meanwhile, further afield, several other haunts of the Spotless Crake were found. Many nests were made before one was used. One pair of birds made nine nests, immediately deserting if one was looked at. This pair also lived in the school swamp, and always used the fine rushes for their nests, which were frail structures 2 inches across and $\frac{1}{2}$ -inch in depth, and of hardly any thickness. The ninth nest, containing one egg, was built against a tree-fern stump in a ragged tussock and under a tangle of ferns and blackberry trailers, among reeds nearly 6 feet high, standing in muddy water. I took the clutch (four eggs) on the 16th November. The eggs were of the brownish type—a uniform wash of brown. Measurements:— $1\frac{7}{10}$ inches \times $\frac{1}{20}$ inch, $1\frac{1}{4}$ inches \times $\frac{1}{20}$ inch, $1\frac{3}{10}$ inches \times $\frac{1}{20}$ inch, $1\frac{1}{4}$ inches \times $\frac{1}{20}$ inch. The same birds

built a chain further up the swamp, in a tangle of blackberries and short reeds. The young birds left the nest on the 15th December. I was fortunate enough to handle one of these, the second clutch of young ones that I had seen. When ready to leave the nest the chick is clothed with down, which is a shining greenish-black, similar to the sheen on the feathers of a Crow in good plumage. The bill is straight, shorter than the toes, and is black from the tip to half-way; from there it is white to the base. Eyes are deep ruby, with a shade of black—not bright, like those of the parents; legs long, and, like the feet, greyish greenish-black; toes wide apart and $\frac{1}{2}$ inch in length. The parent birds call their brood with a purring sound, while the young answer with a "squeak," similar to a chicken's cry. When disturbed they squat in the rushes, and the adult birds perform grotesque antics and utter strange sounds to entice the intruder away. A special call is used to gather the fledglings together after the danger has passed.

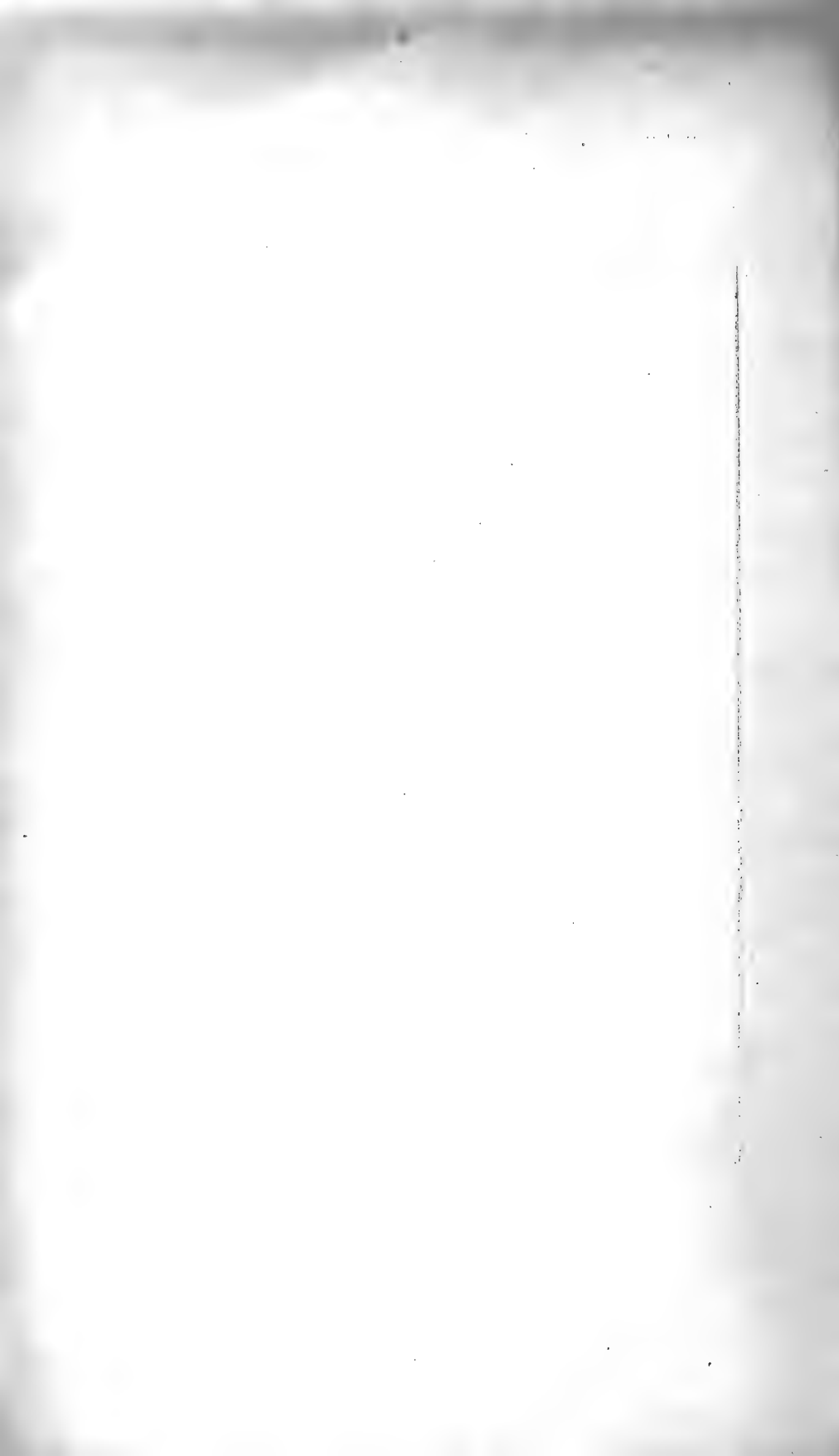
One afternoon in December my sister and I were exploring the banks of a creek. I struck some rubbish at the sides with a stick. Instantly there was a splash, and I caught sight of a brown bird as it dashed under the tangle of a blackberry-covered island. The Crake alarm call rang out, and was answered from the bank on our side. Leaning over the edge, I could just see a nest in a tangle of reeds, but it was empty. One cannot tell whether nests have been used or not. Unlike the Rails, Spotless Crakes do not leave the egg-shells in the nest. Choosing a good position for watching, we waited. The water was 4 feet deep, and flowing steadily. I trained my eyes on the cover from whence the male bird had answered, and saw him come out and cross over to the island. It swam with the body under water, landed, and with a quick, crouching run, joined the female. Then the birds were silent. We hunted, but found only an old nest. We moved away, and after a few minutes the call for the young sounded, and was answered by squeaks from three directions. Presently a chick swam up the creek close to the bank, where the movement of the current was not felt; another called from the island; and a third from under the first nest found. We could see it on the edge of the reeds. It toddled to the water, then drew back as if afraid. Finally, the coaxing of its mother persuaded it, and it scrambled across.

In all this season I have inspected 19 nests (containing eggs) of the Spotless Crake, and handled three broods, located several others by the squeaks of the chicks, and examined 70 nests which, as far as I know, were never used, or probably were robbed. These nests were all placed in tussocks, and height ranged from 1 foot to $3\frac{1}{2}$ feet above the water or slush. Sword-grass clumps were favoured, but a few birds chose the tall, thick reeds (*Juncus pallidus*), and toward the end of the season we found several nests in rushes in thick beds of tall, wild peppermint in the midst of bog. The birds do not seem to mind animals grazing through



Nest of Spotless Crake (*Porzana immaculata*).

FROM A PHOTO. BY J. W. BEATTIE, HOBART.



their haunts. The nests are frail structures, and even when they contain eggs are not easily discovered. Some were placed in the dense jungle of the swamp, others almost on dry ground near the edge, but in every case the "run" dropped into water. All used nests had a staging, in some cases two, and in one nest three platforms were built. Generally speaking, the centre of the tussock is chosen, but a few nests were placed at the sides of the clump, though not on the ground. If the female decides to lay in a nest she begins to form a roof by bending the reeds above. I heard a bird at work one evening. Of course, I could not see her, but the tops of the rushes shook and rustled. I took a clutch of eggs from this a few days later. Seven days afterwards my sister found the bird brooding in a new nest in the next clump. A nest found on 6th September contained one egg on 4th October. Another September nest contained eggs on 2nd December; still another, found on 12th November, contained an egg on 7th December. On 25th October I found a few muddy strands laid across each other in a fairly open tussock in a strip of boggy water. Passing through the same piece on 7th November, I disturbed the bird from three eggs. The nesting periods commence about the beginning of September, judging by the fact that on the 27th September I found a nest containing three heavily incubated eggs.

The last clutch of eggs was found by my scout on the 24th January, 1914, and at time of writing (February) there is a new nest under observation. The birds lay between 9 a.m. and noon, and every day (an exception noted). Three appears to be the normal clutch, four the maximum. Thirteen of the 19 clutches examined consisted of three eggs, the remainder of four. Three broods of three each were observed. From these facts it appears that three is the average clutch in this district.

The two clutches of eggs in the possession of Mr. Malcolm Harrison, of Hobart, are similar in measurements and colour to those found in this district. The clutches number four in each case.

The colouring of the eggs examined varied somewhat, though the brownish type predominated. On the whole, there is a certain resemblance in colour markings to the eggs of the Ground-Thrush (*Oreocincla macrorhyncha*). Eggs of the first clutch taken were greener and paler than others of the season. This may have been colour protection, the reeds in September being in their full spring growth. Another clutch was prettily mottled with darker markings, while in a third, of a lighter type, two eggs were similar, but the other was boldly flecked with chestnut, dark brown, and purplish markings. The female begins to brood immediately the clutch is completed. The incubation period, judging by observations, extends over from 14 to 16 days. When the nest contains an egg or eggs the owners become very quiet. It is worth noting that the 70 nests recorded were in the haunts of 17 pairs of Spotless Crakes, spread

over a radius of two miles, taking the school swamp as a centre.

The illustration of nest and eggs (three) of the Spotless Crake was procured for me through the kindness of Mr. A. W. Swindells, of Hobart. The photographer was Mr. J. W. Beattie.

Notes on the Spotless Crake and Western Ground-Parrot.

By F. LAWSON WHITLOCK, R.A.O.U., CHILTERN, TUDOR SIDING,
DENMARK LINE, W.A.

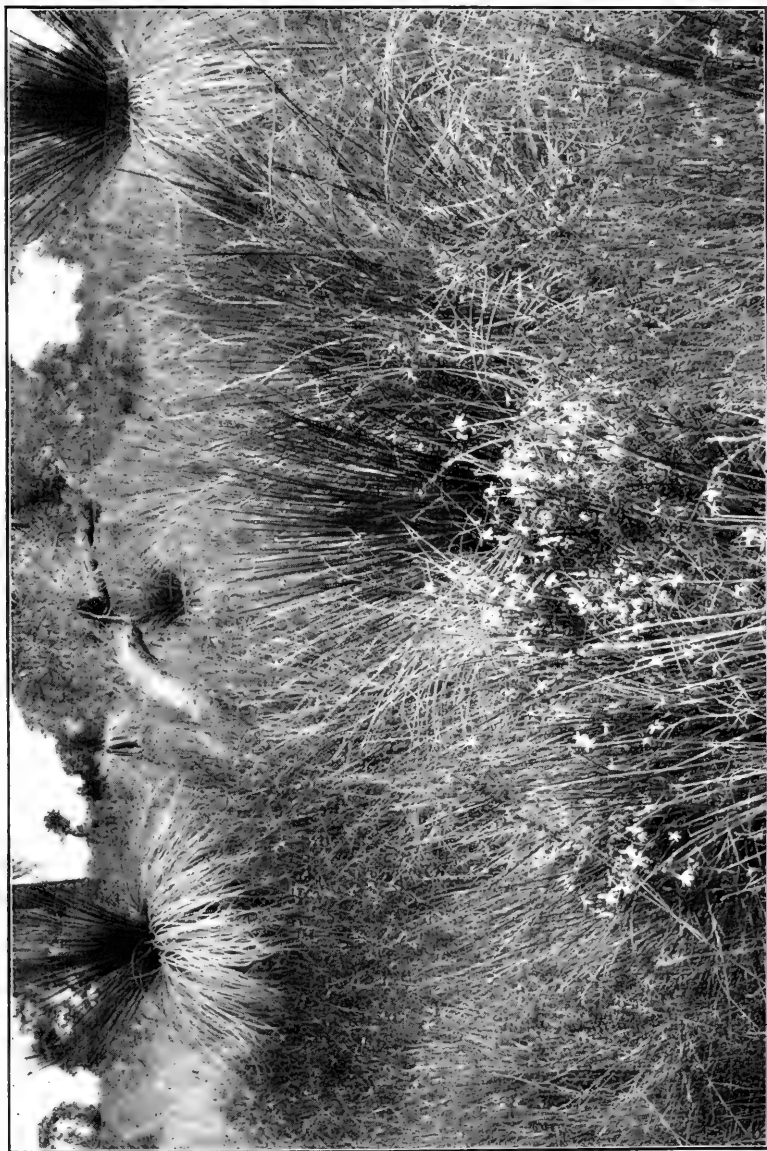
OUR rainy season commences as a rule early in April, the annual fall being 36 inches and upwards, and the country, generally speaking, is well supplied with swamps and wet ground. During the months of January, February, and March, however, our climate is usually hot and dry, when all surface water quickly disappears. The haunts of the Spotless or Tabuan Crake (*Porzana immaculata*) and other semi-aquatic birds are subject, therefore, to a certain amount of local change.

In the wet months—and these include the breeding season—pairs are more frequently met with in what may reasonably be termed flooded ground rather than around the large and more or less permanent swamps. My first experience of the Spotless Crake occurred in the hot, dry weather, when I picked up a chick only a few days old in a wheel-rut near Torbay Junction, about 10 miles west of Albany. Probably others of the brood were concealed in the long grass close at hand. This was in March, 1905. The general appearance of this newly-hatched chick was black, with just a tinge of deep brown in the thick down clothing the body. The legs, feet, and beak, too, were black, with just enough gloss to suggest they had been black-leaded.

Again, in December, 1911, I was engaged in ornithological work within a couple of miles of Albany, when I was shown a pair of rough skins of the Spotless Crake. These were the remains of birds brought in from a neighbouring thicket by a cat. At the time of my visit to this particular locality, a third example was brought home by the same cat; I secured this, practically undamaged.

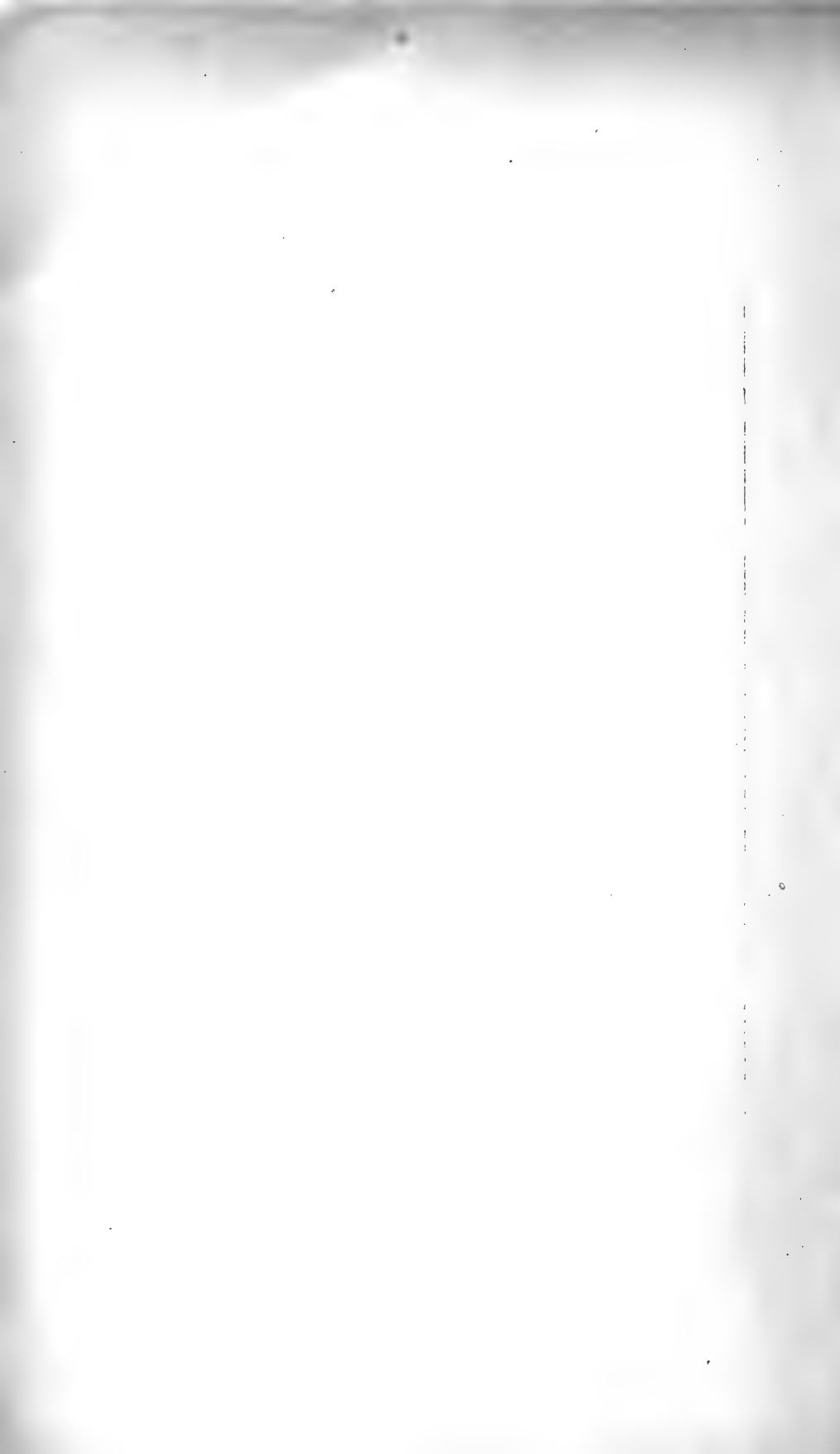
The following year a pair of small Crake's eggs, from a clutch of four (unblown), were given to me. The identity of these eggs, which are a little larger than typical eggs of the Spotless Crake, is not absolutely certain, however. The same season, in searching for nests of the Grass-Bird (*Megalurus striatus*), I heard peculiar but Crake-like notes issuing from a large clump of reeds. I enticed the creatures out by imitating the notes as well as I could, and had a good view of a Spotless Crake a few feet away. I could clearly distinguish the peculiar pinkish-red of the irides.

In November, 1913, I had occasion to camp on an extensive



Haunt of Spotless Crane (Nest in tussock where white flowers appear). Also haunt of *Stipitarius* and *Sphenura*.

FROM A PHOTO. BY F. L. WHITLOCK.







Nest of Spotless Crake (*Porzana immaculata*) in situ.

FROM A PHOTO. BY F. L. WHITLOCK.

black-boy (*Xanthorrhæa*) flat. On either side of the bit of dry ground on which my tent was pitched were tracts of sloppy ground, with dwarf tea-tree, *Banksia*, *Xanthorrhæa*, *Leptospermum*, and long herbage growing profusely all over them. At dusk I heard the notes of a pair of Spotless Crakes which came out to feed as the light faded. I spent the whole of one morning paddling about in water which varied in depth from two to eighteen inches in a vain quest of their breeding place. I saw nothing of the birds nor of their nest; but on 11th November, whilst searching for the nest of another species of bird, on the opposite side of my camping-ground, I came across four eggs of the Crake, laid in an apology for a nest, concealed in a tuft of long grasses and beautiful white-flowering plants. The eggs were placed with their thin ends pointing to the centre, after the manner of a clutch of Plover's eggs. The nest itself was a slight cavity, formed by the half-exposed roots of the surrounding grasses, with a mere pinch of dead grass as a lining. I photographed the eggs *in situ*. The surrounding ground was totally devoid of water; the nearest pool was a hundred yards away, and rapidly drying up.

A little later in the year I encountered a family (probably six birds) in the *Megalurus* swamp before mentioned. This party was a noisy one, the individuals continually calling one to the other. The most frequent note resembled the syllable "Quip," sharply uttered in a whistling tone, and one readily imitated. Another very curious sound was frequently uttered, too. I can only compare it to the rattle made by a sewing machine running at a high speed. This can be imitated by pressing the in-doubled tongue against the palate and blowing hard through the nearly closed lips. Another sound resembled a very liquid and bubbling noise; but this was only occasionally uttered. During these observations I had members of the party all around me, and as I tried with more or less success to imitate their notes, one or other would take a peep at me, or run from one clump of reeds to another. They are dainty and pleasing little birds in their movements, and with each step the short little tail is jerked downwards. On the water drying up on this large swamp the Crakes, Bald-Coots, and other aquatic birds repair to a neighbouring bulrush swamp, which I regard as permanent water, and when waiting for a shot at same I often hear their notes, and at times get a glimpse of them on the margins of vegetation beds.

Eggs of the Spotless Crake have been described from specimens taken in Tasmania, or from islands adjacent to Australia; but a photograph of the nest *in situ*, discovered on the mainland, will not be without interest. (See Plate XX.)

Mr. A. J. North has separated the Western Ground-Parrot from the Eastern form, under the name *Pezoporus flaviventris*. Information as to the character of the nest and eggs of the Western form became, therefore, desirable. I found it a very difficult bird to study, and the task of finding its nest and eggs trying in the extreme to one's patience. It is absolutely

the most silent and unobtrusive bird I have yet encountered in Western Australia. Occasionally one may unexpectedly flush an individual in some more or less frequented spot; but as a rule to find these birds one must go to the undisturbed flats and systematically tramp through all the closely-growing vegetation, and, if in luck, an odd bird, or at times even a pair, may be flushed, with a startling suddenness, into a flight of 40 or 50 yards, when they drop into the herbage again just as suddenly as they rose. I have never seen this species fly at a greater height than 8 or 9 feet. The flight is slightly undulatory, but very different to that of ordinary Parrots, the wings being very rapidly beaten at intervals, with periods of gliding flight more like that of a Quail between, the tips of the wings being pointed downwards like those of the latter bird. It never flies any great distance, and when about to alight appears to fall headlong to the ground. Usually it can be flushed again if followed immediately, as it does not appear to run along after alighting. Once or twice I have been able to watch a bird at close quarters. Despite its long legs, it does not appear very active on the ground, but it certainly moves with more grace and greater ease than the average Parrot, the awkward, waddling gait of the latter being quite absent.

The early settlers in this district tell me this species is not so frequently seen as formerly. Common, in the true sense of the term, I can hardly believe it ever was, and, with the numbers of large lizards haunting the flats, the wonder is it has not been exterminated years ago. Mr. James Knapp, who was born in this district over fifty years ago, states that as a boy he has more than once marked a bird down, and by carefully crawling on hands and knees has knocked it over with a stick. He attributes the diminishing numbers of these beautiful Parrots to Quail-shooters; but there are many square miles of flats as absolutely undisturbed now as they were fifty years ago. Bush-fires are probably more frequent now than formerly, and in dry seasons there may be some destruction of young not yet strong enough on the wing to escape.

In the spring of 1912 I spent many tiring hours tramping the flats on behalf of Mr. H. L. White, of Belltrees, N.S.W., in quest of the eggs of this species. Though I not infrequently flushed the birds, it was not until after weeks of plodding search that I discovered a nest containing two young birds a few days old. This was on 20th October. The nesting-site was on a low but dry ridge, thickly clothed with herbage, amongst which a few small, rounded, prickly bushes were growing—probably a species of dwarf *Hakea*. A slight hollow had been scratched out by the parents and scantily lined with dry grasses. The young birds uttered feeble and querulous cries when handled. Their bodies were clothed with a neutral-tinted down, with beak, legs, and feet lead-coloured. I photographed them as they lay in the nest. I saw absolutely nothing of the parents, nor could I flush them near at hand.



Nesting Site of Western Ground-Parrot (*Pezoporus flaviventris*).

FROM A PHOTO. BY F. L. WHITLOCK.



The present season I found a nest of the previous year, with remains of the hatched eggs, and was also fortunate, after a long and weary search, in securing three fine and freshly-laid eggs from a nest sheltered, as before, by a prickly (?) *Hakea* bush. This was on 20th November—just a month later than the previous season. I flushed the female from this nest at a distance of about 10 feet away, and, though I made several attempts to see her sitting on her eggs, I was unsuccessful in this respect. The eggs were well sheltered by the overhanging bush, and the nest was very neatly lined with fine dead grasses, the latter being arranged in a true circular manner. When flushed the female flew a short distance away, and uttered no sound. I saw nothing of the male. As far as I can judge, he spends the day at some distance from the nest, lying concealed in low, thick scrub, from which he will not emerge until nearly trodden upon.

In searching for a nest of this species I may state that I examined no less than nine nests of the Emu-Wren (*Stipiturus westernensis*)—all this season's. It is a curious fact that such a small and feeble-flying species as the Emu-Wren can hold its own when larger species like the Noisy Scrub-Bird (*Atrichia clamosa*) and the Western Bristle-Bird (*Sphenura longirostris*) are, in this coastal district, verging upon, if not quite, extinct.

The eggs from this nest were described by Mr. H. L. White in *The Emu*, January, 1914. They now form part of his fine collection.

Birds of the Brunnette Downs, (N.T.)*

(Observed during February, March, and April, 1913.)

BY HARRY G. BARNARD, R.A.O.U.

Uroaëtus audax. Wedge-tailed Eagle (Eagle-Hawk).—A few odd birds were observed flying high in the air, and some old nests were seen in gidgea trees at heights of from 7 to 10 feet from the ground.

Hieraëtus morphnoides. Little Eagle.—A few birds seen, generally on the wing.

Haliastur spheunurus. Whistling Eagle.—Very plentiful; found breeding in March and April in the gidgea trees growing near water-courses.

Gypocitinia melanosternon (decepta). Black-breasted (Northern) Buzzard.—Occasionally seen flying over the plains.

Milvus affinis (napleri). Northern Allied Kite.—Very common, breeding freely in the gidgea. About 70 nests were examined, but only in two instances were clutches of three eggs obtained, the other nests containing either two eggs or two young birds or one egg or one young bird.

* Skins of any birds mentioned in this list, about which any doubt existed, were identified by Mr. G. M. Mathews, and are shown in his sub-specific names in parentheses.

Falco subniger. Black Falcon.—Very scarce ; only odd birds seen.

Falco lunulatus. Little Falcon.—Odd birds seen, generally catching large grasshoppers, which, during the day time, were on the wing in millions.

Falco melanogenys. Black-cheeked Falcon.—Only odd birds seen, generally on the wing

Circus gouldi. Allied Swamp-Hawk.—Fairly common, hovering over swamps and catching grasshoppers off the lignum.

Circus assimilis. Spotted Swamp-Hawk.—Seen frequently flying low over the plains in search of food.

Hieracidea occidentalis. Striped Brown Hawk.—Common, both flying over the plains and in the timber ; a number of immature birds were seen.

Cerchneis cenchroides. Nankeen Kestrel.—Very common ; seen resting in small patches of timber and hovering over the plains.

Astur approximans. Goshawk.—Common in timber country ; nearly all birds observed were immature.

Strix delicatula. Delicate Owl.—Four birds seen, flushed from holes in stunted coolibah along the creeks.

Podargus phalænoides. Freckled Frogmouth.—Fairly common in the gidgea, where they were breeding.

Ægotheles novæ-hollandiæ (leucogaster). (White-bellied) Owlet Nightjar.—Very scarce ; found breeding in gidgea stumps a few feet from the ground.

Corvus coronoides. Crow.—Very common, breeding freely in the gidgea and coolibah trees along water-courses during February and March.

Gymnorhina terræ-eginæ. Little Magpie.—Fairly common ; several old nests seen in the gidgea.

Cacatua derbyana. Pallid Rose Cockatoo.—Common. A few were found breeding during February and March in the coolibah trees along the water-courses.

Liemetis tenuirostris. Long-billed Cockatoo (Corella).—Seen in flocks of hundreds. A few were found breeding during February and March in hollows in the coolibah trees.

Calopsittacus novæ-hollandiæ (obscurus). (Northern) Cockatoo-Parrot.—Numbers seen, always in small flocks, but did not appear to be breeding.

Melopsittacus undulatus (intermedius). (Northern) Warbling Grass-Parrot.—A few small flocks seen, generally in open country.

Pteropodocys phasianella (pallida). (Northern) Ground Cuckoo-Shrike.—Fairly common ; generally seen in pairs, breeding in the gidgea trees in February and March.

Graucalus melanops (connectens). (Queensland) Black-faced Cuckoo-Shrike.—Plentiful ; many fully grown young seen.

Grallina picata. Pied Grallina (Magpie-Lark).—Common ; breeding freely along the water-courses in February and March.

Rhipidura motacilloides. Black-and-White Fantail. — Common ; found breeding alongside the Grallina in the gidgea trees.

Seisura inquieta (nea). (Northern) Restless Flycatcher.—Two or three birds seen near water.

Artamus melanops (florenciæ). (Northern) Black-faced Wood-Swallow.—Fairly common. Nests found with eggs and young in February and March.

Artamus personatus (gracilis). (Northern) Masked Wood-Swallow.—Large flocks seen, generally in lightly-timbered country.

Artamus leucogaster (harterti). (Western) White-rumped Wood-Swallow.—A few birds seen about the swamps.

Melanodryas picata. Northern Hooded Robin.—A few pairs seen among the gidgea, often accompanied with fully fledged young.

Cuculus pallidus. Pallid Cuckoo.—Fairly plentiful when I arrived here in February, and several immature birds were seen, but they had all disappeared by April. Probably gone towards the coast, as it is said to be very cold in this part during winter.

Chaleococcyx basalis. Narrow-billed Bronze-Cuckoo.—Very scarce. An egg found in nest of *Malurus dorsalis*.

Scythrops novæ-hollandiæ (neglectus). (Little) Channelbill.—Odd birds seen in the gidgea trees or flying high in the air. They do not appear to stay here, probably making over the coastal fall.

Geopelia tranquilla. Ground-Dove.—A few birds seen on our arrival here, but they disappeared soon afterwards.

Geopelia cuneata. Diamond Dove.—Plentiful everywhere. A few bred during March.

Fulica australis (ingrami). (Northern) Coot.—Numbers seen in the lignum swamps, but were not found breeding.

Porphyrio melanotus. Bald-Coot.—A few seen at lignum swamp near the station; none seen elsewhere.

Antigone australasiana. Crane (Native Companion).—Several pairs seen, and their nests found on the plains, in one instance fully a mile from water. One nest, when found, contained a single egg, which was left, and the nest again visited two days later; the nest then contained only a few very small pieces of egg-shell and a small stone which was certainly not there when the nest was first seen. If there is any truth in the story of the Black-breasted Buzzard (*Gypoictinia melanosternon*) robbing nests, he was probably the culprit, as one was circling near.

Chorlotis (Eupodotis) australis. Bustard (Wild Turkey).—Fairly plentiful, but not nearly so many as I expected. Last season being a very dry one, they may have shifted for water and not yet returned. Half-grown young were seen and fresh eggs taken in February and March. The eggs are placed on the bare ground beside a tuft of grass.

Carphibis spinicollis. Straw-necked Ibis.—These birds were about the swamps in thousands, but only in two places was any attempt made to breed. At one swamp the nests were placed on the mud against trees growing by the water, and a few eggs laid, but, as the swamp was dry ten days after, this rookery was deserted; the other nests were placed on lignum growing in a few inches of water. At the time of our visit only two sets of eggs were laid, and these were taken.

Plegadis falcinellus. Glossy Ibis.—Several small flocks seen about the swamps, and one flock of about 100 birds was seen flying towards the coastal fall, where the rains are much heavier. As this swamp would be dry in a couple of weeks after our visit, and was 13 miles from our camp, we did not again visit the locality. This rookery was also most probably deserted.

Ibis molucca (alligator). (Northern) White Ibis.—A few seen about the different swamps. A small colony of five pairs bred in a lignum swamp; the nests were placed close together on a large clump of lignum. Three sets of eggs were taken, and the birds deserted the place.

Platalea regia (stalker). (Northern) Black-billed Spoonbill.—A flock of about 20 of these birds remained at a lignum swamp for some time, but eventually left. They were in full breeding plumage.

Platibis flavipes (white). (Northern) Yellow-billed Spoonbill.—Odd birds seen at the swamps.

Herodias syrmatorphorus (neglecta). (Northern) Egret.—Only two or three birds seen.

Notophox pacifica (alexandrae). (Northern) White-necked Heron.—A few birds seen; one pair found breeding.

Notophox novæ-hollandiæ (parry). (Northern) White-fronted Heron.—Fairly common; were breeding.

Edienemus rufescens. Little Stone-Curlew.—A single pair seen in a patch of gidgea.

Erythronys cinctus. Red-kneed Dottrel.—Odd birds seen about the swamps.

Ægialitis nigrifrons. Black-fronted Dottrel.—A few were seen about the swamps.

Nycticorax caledonicus. Nankeen Night-Heron.—Odd birds seen roosting in trees near swamps.

Glareola grallaria. Pratincole.—These birds generally go on stony ground. Only one small flock was seen.

Himantopus leucocephalus (assimilis). (Northern) White-headed Stilt.—A small flock seen at the Head Station swamp. The rains were very light out here this year; only a few small swamps were filled. This being the largest, most of the water-birds were observed about it, but did not breed, owing to being constantly disturbed.

Lobivanellus personatus (harterti). (Eastern) Masked Plover.—Common round all the swamps, and many nests were seen during February and March.

Hydrochelidon fluviatilis. Marsh-Tern.—A small flock was seen at times flying over the swamp.

Pelecanus conspicillatus. Pelican.—Only odd birds seen. These birds are said to breed in thousands on a large lake near here, but at the present time the lake is dry.

Podiceps poliocephalus (cloates). (Western) Hoary-headed Grebe.—Only odd birds seen.

Podiceps australis. Great Grebe.—Seen on water-holes in the creeks—always five or six together.

Phalacrocorax hypoleucus. Pied Cormorant.—Odd birds seen about the water-holes.

Plotus novæ-hollandiæ. Darter.—A pair of birds seen at a swamp.

Dendrocygna eytoni. Plumed Whistling-Duck.—Fairly common; found breeding on the downs away from water.

Anas supercillosa. Black Duck.—Common; young birds seen.

Nettion gibberifrons. Grey Teal.—Common; found breeding in the hollows of coolibah trees on water-courses.

Nyroca australis. White-eyed Duck.—A few birds seen.

Malacorhynchus membranaceus. Pink-eared Duck.—Seen in hundreds, but did not appear to be breeding.

Anseranas melanoleuca. Pied Goose.—A flock of two or three hundred seen on a large water-hole.

Chætura caudacuta. Spine-tailed Swift.—Several flocks seen after rain.

Dicaeum hirundinaceum. Mistletoe-Bird.—Fairly common, generally in the mistletoe hanging on gidgea trees.

Cisticola exilis (alexandræ). (Pallid) Grass-Warbler.—A fair number of these little birds was seen on a plain some distance from here. Several nests were found with young and heavily-incubated eggs.

Malurus cruentatus. Red-backed Wren.—Generally seen in pairs in the long grass. Several nests were found with young.

Ephthianura tricolor (distincta). (Northern) Tricoloured Bush-Chat.—Only one pair of these little birds was seen.

Campephaga humeralis (indistincta). (Pale) White-shouldered Caterpillar-eater.—Very common; were breeding everywhere in the gidgea.

Pachycephala pallida. Northern Whistler.—Fairly common; found breeding in the gidgea.

Ptilotis forresti. Pale Singing Honey-eater.—Common in the gidgea, where they were breeding.

Myzantha flavigula. Yellow-throated Miner.—Only two or three birds seen in the gidgea.

Conopophila ruficularis (queenslandicus). Rufous-breasted Honey-eater.—Fairly common along water-courses, where they were breeding.

Melithreptus lætior. Golden-backed Honey-eater.—Only a pair of these Honey-eaters was seen, feeding in a bunch of mistletoe.

Smicrornis flavescens. Yellow-tinted Tree-Tit.—A few pairs seen about the coolibah creeks.

Pardalotus uropygialis. Chestnut-rumped Pardalote.—Odd birds about the coolibah trees near the creeks.

Neositta leucoptera. White-winged Tree-runner.—Two small flocks seen in the gidgea.

Tæniopygia castanotis (alexandræ). (Northern) Chestnut-eared Finch.—Common. Found breeding in the gidgea, also on the under side of Kites' and Whistling-Eagles' nests.

Poephila personata. Masked Grass-Finch.—A few pairs were seen on the plains, where they were breeding in the grass.

Mirafr rufescens.* Rufous Bush-Lark. — Very common on the plains. A number of nests found, both with eggs and young.

Cinclorhampus cruralis (rogersi). (Northern) Brown Song-Lark. — A few birds were seen on the plains, where they were breeding.

Cinclorhampus rufescens (horsfieldi). (Northern) Rufous Song-Lark. — A few birds seen about small bushes near the plains.

Haleyon obscurus. (Northern) Red-backed Kingfisher. — Common about the gidgea; the only Kingfisher seen out here.

Turnix pyrrhotorax. Red-chested Quail. — Several birds seen with young; one nest found on plain, with eggs.

[The foregoing list has been kindly supplied by Mr. H. L. White, R.A.O.U., Belltrees, New South Wales, for whom Mr. Barnard is collecting. — Eds.]

Search for Eggs of *Colluricincla woodwardi*.

BY HARRY G. BARNARD, R.A.O.U.

HAVING searched the sandstone hills for miles around Borroloola (N.T.) in vain for the "Sandstone Thrush" (*Colluricincla woodwardi*), I determined to try further afield. I heard that at the junction of Western Creek with the Macarthur (20 miles west) there was much high sandstone country, and determined to try that locality. My assistant not having returned from the tableland, I went alone.

I left Borroloola on Wednesday morning, the 10th December, taking with me a small tent-fly, a mosquito net, and enough flour, tea, and sugar for four or five days. Beef I could not carry, but depended on my gun and the rock wallaby "venison." I reached the edge of the sandstone country, one mile from Western Creek junction, at mid-day, and, finding water in the Macarthur River, I decided to camp. It was not known if there was water further on. After lunch and a couple of hours' spell, I took a turn for a few miles through the sandstone. All the sandstone seen was of the same class as that round Borroloola—namely, the columnar variety. This sandstone outcrops from the flat, sandy country, and rises in columns from a few feet to 50 or 60 feet in height, and is intersected in all directions with narrow passages which one may in places wander through for miles. The columns at a short distance resemble huge beehives. I saw no sign of the bird I was in quest of, but saw a single specimen only of a Grass-Wren (*Amytornis woodwardi*). As the sun was getting low I returned to camp, and after supper crept beneath the net, to be lulled to sleep by the howling of the dingoes, which are apparently very plentiful hereabouts. Thursday morning I was early astir, and after a hasty breakfast I took a south-west course to see if I could not reach the same class of country as that in which we found the bird when at Macarthur Station. After going about

* Ingram, *Bull. Brit. Orn. Club*, vol. xvi., p. 116.

three miles I climbed a sandstone hill to get a view of the country. I was on the edge of a wide valley, which stretched before me for about two miles. On the far side, and rising abruptly from the valley was a range of red sandstone rising to a height of 700 to 800 feet, the high cliffs and dark ravines being perfectly visible. Here, I thought, is the country I am in search of. Descending to the valley and making my way across it, I suddenly came to a rocky depression, through which flowed a beautiful spring, the water being like crystal. Its course formed numerous small holes, which were covered with purple water-lilies—a transporting sight in this barren land of stunted timber and spinifex. After a good drink and a short spell I again went forward. Signs of a recent storm, in the shape of broken boughs and uprooted trees, became visible, and a little further on pools of water were seen among the rocks. On reaching the sandstone I made my way up a ravine till a large overhanging rock on my right attracted my attention as a likely place for a Thrush's nest. On approaching it and looking round I observed a nest partly hidden behind a jutting ledge of rock, and, placing my hand therein, was delighted to find a pair of eggs. Lifting them carefully out, I at once saw they belonged to a Thrush. Replacing the eggs, I retired to the shelter of a rock, and, after waiting a few minutes, heard the clear whistle of a *Colluricincla*, and a few seconds after a female *C. woodwardi* flew on to the ledge beside the nest, and, after a careful look round, sat quietly down on the eggs. The instant I moved, however, she was gone like a flash. Carefully packing the eggs in a collecting box, I resumed the search, and by mid-day had located five more nests, none of which, however, had eggs. While the quart-pot was boiling I reviewed the situation, and came to the conclusion that the distance from camp was too great to allow of good work, so decided to shift it. After lunch I made a bee-line for camp, which was reached about 3 o'clock. I at once dismantled and re-packed the outfit, and once more turned my face towards the sandstone ranges. As a storm was brewing, I lost no time on the return journey, and by sundown was under the friendly shelter of the rock from which I had taken the Thrush's eggs in the morning. Cutting some saplings, I wedged them between the floor and roof of the rock and swung my net between them. By this time the storm was sweeping over the hills, and, although the thunder and lightning were very severe, I was quite secure in my rocky refuge. My supper consisted of Johnnie-cake and roast rock wallaby. Friday and Saturday were spent in searching the ranges, and, although many nests of the Thrushes were seen, both new and old, no further eggs were taken.

A fair number of *Amytornis woodwardi* was seen, and two old nests of last season were observed in the top of spinifex clumps, but they do not seem to have made a start for this season, probably the delayed rain and great heat (the thermometer averaging 105° for the whole of November at the police barracks in

Borrooloola) being the chief cause. Several nests of the Little Wood-Swallow (*Artamus minor*) were found in holes in the sandstone cliffs, but they all contained young. Also numbers of old nests of the Fairy Martin were seen in caves or under overhanging rocks. Realizing that I was too early for the birds, I decided to revisit the locality in about 10 days' or a fortnight's time, when I shall hope to do much better. When I returned to Borrooloola I had tramped over 70 miles for a single pair of eggs!

A Visit to the Gosford Scrubs.

BY SIDNEY WM. JACKSON, R.A.O.U., CHATSWOOD, NEW SOUTH WALES.

IN company with my brother, Mr. Frank T. A. Jackson, I spent a few days camped on his property near Gosford, N.S.W., during the last Christmas holidays. Notwithstanding the then unusually dry state of the country, in all 62 species of birds were noted in and about the bush close to our camp, the more elevated portions of which are covered with blackbutt (*Eucalyptus pilularis*), blue gum (*Eucalyptus*, sp.), sweet-scented wattle (*Acacia pruinos*a, a late flowering species), forest oak (*Casuarina*), &c.; while in the beautiful scrub-clad gullies below the camp were tree-ferns, bangalow and cabbage-tree palms, stag-horn ferns (*Platycerium grande*), &c. Here the water-vines (*Vitis hypoglauca*) drooped over the moss-covered logs, and climbed up and linked together the tall and shady scrub trees, such as the maiden's blush tree (*Echinocarpus australis*), bean-ball tree (*Castanospermum australe*), black apple tree (*Sideroxylon australe*). The moss on everything in the scrub was parched, and not of its usual beauty when glistening with moisture. Many broken land-shells—snails (*Helix greyi*, *Helix strangei*, &c.)—were strewn about on the ground in the scrub, and these fragments were no doubt the result of the work of the Lyre-Bird (*Menura*), which, like the beautiful Dragoon-Bird or Pitta (*Pitta strepitans*) of our more northern scrubs, is a great snail-eater, and usually breaks them on a stone. We observed a female Regent Bower-Bird (*Sericulus chryscephalus*) frequently fly over our tent into a clump of mistletoe (*Loranthus*) growing in a forest oak (*Casuarina*) on the edge of the scrub. In this parasitical growth the bird had its nest, which contained young. The female alone was noticed feeding them, and the male was not observed near the nest. Several beautiful nests of the White-shafted Fantail (*Rhipidura albiscapa*) were found, with the birds sitting on eggs or chicks. It was most pleasing to watch the little birds going to and from their nests, which were built on dead limbs of wattle (*Acacia pruinos*a) and turpentine-trees (*Syncarpia laurifolia*) on the recently burnt-off land beside the scrub. Other nests were found, but none of any importance; in fact, most birds had, no doubt, finished breeding,

as it was so late in the season. In a small bush known as native holly (*Oxylobium trilobatum*) a nest of the Yellow-faced Honey-eater (*Phylotis chrysops*) was found, which was neatly hidden in the prickly bush. Two eggs were in the nest, but were not interfered with. Strange to say, we did not see any Parrots. Amongst the birds met with in the gullies were—Lyre-Bird (*Menura superba*), Yellow-bellied Shrike-Tit (*Falcunculus frontatus*), Black-faced Flycatcher (*Monarcha carinata*), Yellow-eared Honey-eater (*Phylotis chrysotis*), White-throated Tree-creeper (*Climacteris leucophaea*), Cat-Bird (*Ailurædus smithi*), Yellow-throated Scrub-Wren (*Sericornis citreigularis*), White-throated Thickhead (*Pachycephala gutturalis*), Little Green-Pigeon (*Chalcophaps chrysochlora*), Brown Fly-eater (*Gerygone fusca*), &c., but none of these was plentiful; in fact, only one specimen of the Lyre-Bird was observed.

The Brown Fly-eater, though a very small bird, livens up the scrub with its sweet twittering song, which resembles "Two tid ed ed, two tid ed ed, two tid ed ed," and is uttered rapidly, the "tid ed ed" being of a higher tone than the first note. The peculiar and familiar notes of the Black-faced Flycatcher awakened us at daylight, and the most usual note of the bird is, as near as I can describe it—"Give us a chew, whack; give us a chew." Often it is repeated several times quickly without the "whack," but ultimately it is brought in.

Bell-Miners (*Manorhina melanophrys*) were fairly plentiful in one pretty dell near our Gosford camp, and their notes simply charmed us. It is delightful to enter the forest where these birds abound, and where their clear, sweet, bell-like jingle falls upon one's ears. The incessant notes resemble the distant jingle of many sheep-bells, the silvery sounds of which go straight to the bird-lover's heart, and crowd his memory with thoughts of stately trees, drooping ferns, and delightful mossy dells, while all the magnificent beauty of the Australian forest and scrub passes along in fanciful procession before him. Shortly after sunset, and before dusk, their bell-like notes generally become silent, and in their place louder and less musical notes are rendered, of quite a different character. The bell-like note is a short, sharp whistle, and is often most difficult to locate. The birds call one after the other in quick succession, and their notes, being apparently of all different keys, cause the bell-like effect. On an early summer's morning, as a light breeze gently fans the valleys, and the golden tints from the rising sun strike the top-most branches of the trees, and before the pulsating and noisy buzz or rattle of the so-called locust (*Cicada*) has begun, then, above all times, the exquisite notes of these birds are heard to perfection. They always keep together, the whole year in the same locality, which may cover an area of only a few hundred yards or so in breadth, and probably no more of their dingley dells will be met with for many miles. I have met with the birds in the bush generally close to the sea. They are difficult to see while

feeding amongst the leaves in the bushy trees, owing to their greenish tinge, and also because they do not fly about much. They appear to have a decided preference for country where the timbers of the forest and scrub meet, intermix, and form a sort of jungle. A few of their neat but old cup-shaped nests were found, placed in ferns and vines only a few feet from the ground, yet they often build very much higher. Nine years ago I found these birds very plentiful in the Gosford district, but since then, I am sorry to say, their numbers have become considerably lessened. In the near future these and other of our native birds will be a thing of the past about Gosford as well as other places, if the "juvenile pea-rifle bird-killing crusade" is still allowed by the Government authorities to so openly carry on its wanton and ruthless destruction. Just below our camp the Bell-Birds chimed sweetly all day as they fed in the bushy branches of the blackbutt and blue gum (eucalypt) saplings on a slope beside the scrub, and the loud crack of the Coachwhip-Bird (*Psophodes crepitans*), the pulsating, buzz-like sound of Jardine's Caterpillar-eater (*Edoliisoma jardinii*), the loud call of the Roller or Dollar-Bird (*Eurystomus pacificus*), the very peculiar whistle or call of the Ground-Thrush (*Oreocincla lunulata*), as well as the clear ringing notes of the Grey Thrush (*Colluricincla harmonica*), were all pleasant music to us.

At night the Frogmouth (*Podargus strigoides*), Boobook Owl (*Ninox boobook*), and White-throated Nightjar (*Eurostopodus albobularis*) often called in proximity to our camp, and on New Year's Eve, in the stillness of midnight, a Koel (*Eudynamys cyanocephala*) "cooeed" the old year out and the new year in. A person who has been living in the district for over fifty years informed me that the Koel was known to him as the "Christmas-Bird," as it usually started to put in an appearance and call about Christmas.

Like many portions of the rich scrubs on the eastern coast, those of the Gosford district are still being rapidly cut down, burnt off, and completely demolished, and the farmers and orchardists are all busily tilling the fertile land and putting in various crops. In time, and before long, the scrub-frequenting birds must move to other parts, where they will probably become more concentrated, provided the pea-rifle fiends and ruthless sportsmen do not slaughter them.

Stray Feathers.

Eagles.—About two months ago I saw two large Eagles (*Uroaetus audax*) near the Werribee Gorge, Victoria, and estimated the wing-spread of each at 10 feet. In the following week one of the birds was shot by the boundary rider, and was measured by Mr. Robert Honnan, pastoralist and owner of the station (late Staughton's). The wings measured 11 feet from tip to tip. Part of the plumage was nearly jet black. The remaining Eagle still haunts the locality.—W. GUBBINS ROCHE. Melbourne, 21/1/14.

Eggs of *Munia pectoralis*.—It will probably be considered presumptuous on my part to criticise the work of writers like Messrs. A. J. North and A. J. Campbell; but, as the following remarks may help to solve a puzzle, I have no hesitation in making them. It has long been a mystery to me why eggs of *Munia pectoralis* should possess a faint bluish shade, while those of the rest of the genus are pure white. Mr. A. J. North, in pages 281 to 283, vol. ii., of his "Nests and Eggs," describes eggs of *Munia castaneithorax* and *Munia xanthoprymna* as being pure white, while on page 286 those of *Munia pectoralis* are said to be "white, with a faint bluish tinge." Mr. A. J. Campbell describes eggs of *Munia castaneithorax* and *Munia pectoralis* in a similar manner, those of the last-named bird being apparently from the same clutch as described by Mr. North. It struck me as being peculiar that birds so closely allied should lay differently coloured eggs. A set in my own collection presented the same bluish tinge, but the eggs were not identified beyond question, and therefore are labelled "doubtful." From the Macarthur River, Northern Territory, Mr. H. G. Barnard lately sent me a clutch of *Munia pectoralis* eggs, and skins of the parent birds shot at the nest; the eggs are pure white, of similar shape to those of the rest of the genus, and measure — (a) .67 x .47, (b) .65 x .47, (c) .67 x .47, (d) .69 x .49, (e) .71 x .48, (f) .67 x .47. I claim them to form the true type clutch of the species. While on the subject of Mr. North's book, if the publication is to be considered an official one, authorized by the Trustees of the Australian Museum, let us hope that these gentlemen will issue a supplement containing descriptions of the many well-known birds omitted from their proper places in the original. In its present form the work, admirable as it is as far as it goes, is very far from being a complete record of the "Nests and Eggs of Birds Found Breeding in Australia and Tasmania."—H. L. WHITE. Belltrees (N.S.W.)

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Frogmouth and Boobook Owl.—For several months past I have heard at night a peculiar metallic call. It appeared to come from the creek, about a mile away, and was never heard earlier than 10 p.m. or 11 p.m. A few days ago I was watching a pair of Tawny Frogmouths (*Podargus strigoides*) flying about our garden, a little after sunset. Occasionally they uttered the call "Oom, oom," as if communicating something of importance to one another, especially after a sudden swoop on the part of either. A little later a Boobook Owl (*Ninox boobook*), a frequent visitor, fluttered into one of the pine trees, and began its leisurely, solitary call. Early in the morning I awoke, and, hearing this metallic call, determined, if possible, to find the author thereof. It should be noted that the Boobook Owl continued its note during the time of which I am writing. Going out into the garden, I at first found it very difficult to locate the bird (presumably) for which I was looking. At times the cry appeared

to come from the east, then from the north, and always from far away. Thinking it best to start the search from home, I stood first under one tree, then another, until, coming to an old, partially leafless eucalypt outside the school fence, I distinctly heard, above my head, the sounds, "More pork, more pork," uttered very rapidly from seven to ten times in succession, with a pause of a minute or two before the next series of calls. I could not discern the bird, but it happened to fly down to a low branch, and, being between me and the setting moon, I could see it plainly—in fact, I could have touched it. It was a Frogmouth. For about twenty minutes I stood watching and listening, comparing the two calls as they happened to be uttered together. Then I followed the Frogmouth from tree to tree until it went to a distant paddock, where I could not follow. As a result of my observations, I would say, firstly, that the Frogmouth does call "More pork," and secondly, that no one who has heard the Boobook Owl's and the Frogmouth's calls could ever mistake one for the other. I will indicate what I consider to be the chief points of dissimilarity:—The Boobook Owl has a leisurely call, the Frogmouth a quick call; the Boobook utters one call at a time, the Frogmouth from seven to ten calls in succession; the Owl makes a slight pause between the two syllables "Boo-book," the Frogmouth makes no appreciable pause between the two syllables; the Owl has the distinct vowel sound "oo," whereas *P. strigoides* utters the "aw" in a guttural manner, not nasal. Heard at close range, it sounds like a hoarse whisper; at a little distance it sounds metallic. Constable Montgomery, of Eldorado, was able to confirm my observations. He has seen and heard the Frogmouth many times.—MURIEL CHENEY. Carraragarmungee, 18/1/14.

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Owlet-Nightjar Nestlings.—A farm hand at Caermarthen, Manilla, N.S.W., at the end of August last selected an old stump in the ranges for the purpose of steadying his rifle while testing its accuracy in a long shot at a rabbit; but before he could open fire an Owlet-Nightjar (*Egotheles nova-hollandiæ*) blundered out of the butt. The hollow stump contained four white eggs just within arm's reach from the top of the spout. I visited the spot on 19th September and found the stump situated in a dry gully between two mountains. The adult birds were absent, but the nest contained four nestlings. Two of the brood appeared to be a day or two older than the others, but all were in the down. The following morning I returned, and was rather surprised to find that the two advanced chicks had left the nest, but I was convinced, after witnessing the activity of the others, that they had departed on their own accord. Some patience was required to obtain photographs. The nestlings would persist in scaling the spout, like mice, or fluttering off in opposite directions from the aperture below. After making exposures, I examined the nest. It was

composed of dried leaves and small pieces of shredded bark, matted together in layers with bird droppings. Evidently Owlet-Nightjars do not clean up after their young like most birds that build in the open, but simply cover the nest each night or early



Nesting Place (opened) and Young of Owlet-Nightjar (*Egotheles novæ-hollandiæ*).

FROM A PHOTO. BY H. BURRELL.

in the morning with fresh leaves for the comfort of the brood during the daytime. However, on this occasion the top layer was certainly snug and dry, while directly underneath the excretions were fresh.—HARRY BURRELL. Kensington (N.S.W.), 24/9/13.

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Leipoa ocellata—Successful Breeding in Captivity.—It will prove of interest to those who love our native birds to learn that a species so shy and retiring as the Mallee-Fowl has at last been induced to breed in captivity. At Cliff Aviary at the present

time there can be seen a mound built by a pair of these birds. It is about 40 feet in circumference, and built from material placed at their disposal. The aviary is about 45 feet long by 11 feet wide, the width increased to 14 feet at one end to admit of mound-building. The female started laying about the end of last August, and up to date has laid twenty-nine eggs. Having a large rainfall, excessive moisture in the mound destroyed all eggs laid previous to last week in November. About three weeks ago the first chick came out; two more have since appeared, and another is about due now. I have been interested in these wonderful birds for about 30 years, making a special study of them and their habits during the past 12 years. A large number of these birds have passed through my hands during my career as a collector of native fauna. They make very interesting pets, getting on very friendly terms with their keeper. Their dispositions vary considerably, it being easier to get on good terms with some individuals than with others. I always, if possible, take the pairs as I find them, avoiding as much as possible the mating of strange birds. I can always form a good idea of their dispositions during the period spent in the collecting camp; but the best birds to deal with are those reared from chicks. I have several such pairs, and for some years I endeavoured to impress on the minds of these birds the need of taking up family duties and responsibilities. At the age of two years they would hardly entertain the thought; at three years I got them to start in a half-hearted way. Not until the fourth year would they fully accept my suggestion; then, in the month of April, they cleaned out the old hot-bed, and set to work with a will. Then I gave them abundant material, which they made good use of, hence my present success—the first instance on record, I believe, of the breeding of Mallee-Fowl in captivity.—J. P. BELLCHAMBERS. Humbug Scrub (S.A.), 17/2/14.

From Magazines, &c.

“Australian Nature Stories for Children.”—Under this title an admirable little handbook by Miss Constance Tisdall, B.A., is published by Messrs. James Ingram and Son, Melbourne. It contains twelve charmingly written stories—four each of birds, animals, and trees. But, although only “stories,” it is a pity that all the natural history facts are not accurate. Surely Miss Tisdall could have got some expert friend to *visé* her proofs. The Laughing Jackass, or Great Kingfisher, is stated to lay “two lovely eggs.” That bird oftener lays three eggs, while the full complement is four. “Some Magpies lay eight eggs” is another statement. Any schoolboy will tell you that Magpies lay three or four eggs, rarely five! But the most astounding statement of all is that the Lyre-Bird lays a “pale green egg”! Exception is also taken to attributing the wonder-workings of Nature to

gnomes and fairies instead of to the Spirit of the Creator. The talented authoress has lost a golden opportunity of lifting, by her powerful pen, the young mind by teaching it to look from Nature up to Nature's God.

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Birds of Melville Island.—*The Ibis* for January contains "A List of the Birds of Melville Island, Northern Territory," by Mr. Gregory M. Mathews, F.R.S.E. No less than 167 species and sub-species are mentioned, with valuable field-notes, and in some cases descriptions of nests and eggs. The author makes full use of the trinomial licence, and the following are instances of some familiar forms in their new nomenclature (members can guess the vernaculars for themselves):—*Chrysauchæna humeralis apsleyi*, *Erolia ferruginea chinensis*, *Cyanalcyon macleayi distinguendus*, *Cosmærops ornatus shortridgei*, *Quoyornis leucura greda*, *Muscitrea grisola riordani*, *Dulciornis alisteri melvillensis*, *Microphilemon orientalis breda*. The general reader would suppose that Mr. Mathews had visited Melville Island, and that the field observations were personal; but, by the mention occasionally, in a negative sense, of Mr. J. P. Rogers's name, it may be inferred that Mr. Mathews had commissioned that reliable collector and observer to visit this interesting locality. In his enthusiasm Mr. Mathews no doubt inadvertently omitted to record that circumstance. In any case, ornithological knowledge has been greatly enriched.

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A New Journal.—The first part (January, 1914) of *The South Australian Ornithologist* has been received, and is welcomed. It is a 24-page journal (size, demy 8vo), modestly got up, but of far-reaching importance and prospective usefulness. The South Australian Ornithological Association is to be congratulated on its ability to support an organ of its own.

The opening chapter contains a succinct and most interesting account, by Mr. R. Compton, R.A.O.U., of "The History of Ornithology in South Australia," of course including the history of the Ornithological Association, which was founded the year previous to the inauguration of the R.A.O.U. It is well to write up such histories "while it is yet day," and not wait, as is usually the case, for a "jubilee," when all papers and persons concerned are often not available.

"The Avifauna of Melville Island, Northern Territory," by Mr. F. R. Zietz, R.A.O.U., is the next article, and by the aid of trinomialism the author has been able to add no less than nine sub-species, with short descriptions, to the Australian bill of birds, namely:—*Chalcophaps chrysoclora melvillensis*, *Astur clarus robustus*, *Aprosmictus erythropterus melvillensis*, *Chrysococcyx minutillus melvillensis*, *Petroica cucullata melvillensis*, *Pachycephala gutturalis longirostris*, *Pachycephala rufiventris minor*, *Colluricincla*

brunnea melvillensis, and *Colluricincla parvula melvillensis*. But according to "A List of the Birds of Melville Island," published by Mr. Gregory M. Mathews in *The Ibis* for January, does not *Aprosmictus erythropterus melvillensis* appear to be *A. e. coccineopterus*, *Chalcophaps chrysocloria melvillensis* to be *C. c. longirostris*, *Chrysococcyx minutillus melvillensis* to be *C. m. minutillus*, *Petroica cucullata melvillensis* to be *P. c. subpicata*, and *Pachycephala gutturalis longirostris* to be *P. g. consobrina*?

Mr. Edwin Ashby, R.A.O.U., also technically and trinomially describes a new sub-species of Kingfisher from Northern Territory, *Halcyon macleayii cæruleus*, remarking that it is easily distinguished from its congener, *H. macleayii* (or, as it should be written, *H. m. macleayii*), by its more intense and brilliant blue colouration, &c.

There is no disguising the fact that *The South Australian Ornithologist* is out for trinomialism. Therefore, it behoves the editorial committee to be consistent, and not make the journal, however small, "a hybrid," so to speak, by introducing binomial nomenclature as well as trinomial. If the journal declares for trinomials, then on the opening page (6) there are two omissions—*Artamus melanops* and *Malurus callainus* should be written respectively *Artamus melanops melanops* and *Malurus melanotus callainus*. On page 18, *Rhipidura tricolor* should undoubtedly be *Rhipidura tricolor motacilloides*. Again, in Dr. A. W. Morgan's valuable contribution (page 21), *Dicaeum hirundinaceum* should be *Dicaeum hirundinaceum hirundinaceum*, to distinguish it from either *Dicaeum hirundinaceum yorkei* or *Dicaeum hirundinaceum tormenti* on the trinomial "Reference-list" (Mathews). Mr. J. W. Mellor, R.A.O.U., is correct in stating (page 22) that the Fan-tailed Cuckoo is the *Cacomantis flabelliformis* of Gould, but he (Mellor) is wrong in stating that Mathews calls the bird *Cuculus rubricatus*; it should be *Cuculus rubricatus rubricatus*. Similarly, *Acanthiza pusilla* should be *Acanthiza pusilla pusilla*. Mr. H. E. Laffer, in mentioning the Brush Wattle-Bird (page 22) calls it *Anellobia chrysoptera* instead of *Anellobia chrysoptera intermedia*, while *Merops ornatus* should be *Merops ornatus ornatus*; and in Mr. C. L. Compton's interesting snake-killing "Observation of Laughing Jackass" the technical name should have been written *Dacelo gigas gigas* instead of merely *Dacelo gigas*. However, in future issues of the journal no doubt such anomalies will disappear, otherwise there will possibly be a danger of misleading students.

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Penguins of the Antarctic.—The Smithsonian Report for 1912 contains an article entitled "The Penguins of the Antarctic Regions," by L. Gain, D.Sc., naturalist of the Charcot Expedition. Following is portion of the article (which was translated, with additions, by the author from *La Nature*, Paris, No. 2,041, 6th July, 1912) dealing chiefly with the Adelie Penguin (*Pygoscelis adeliae*):—

"From whatever side one approaches the Antarctic, whether

from south of America or from the longitude of Africa or of Australia, throughout the circumference of this vast polar continent the Adelie Penguin is always one of the animals encountered by the voyager on his route. This bird is everywhere, watches over everything; it is to him, indeed, that the Antarctic belongs. Curious, unruly, violent, a chatterbox and blusterer, of an extraordinary liveliness, you should see him dart like an arrow from the water to a height of more than 2 meters, and fall vertically down again on the piece of ice or the rock chosen for his resting-place.

"Never leaving these regions or passing north of 60° south latitude, they people the isles of the frontier, the low elevations of the Antarctic continent, on which, during a few months of the year, the snow, in melting, leaves some clear spaces of soil.

"On slightly uneven locations they settle in numerous colonies during the period of breeding and raising their young, forming these noisy cities, these rookeries, which number thousands, often even tens of thousands, and sometimes even hundreds of thousands of individuals.

"After having abandoned their rookeries for the winter, which they pass on the open sea, opposite the land ice, the Adelies return in October to their cities and immediately take possession of their rocks again. Indeed, these rocks are really theirs, for, according to the observations made on the spot at Petermann's Island, where the *Pourquoi Pas* wintered, I have ascertained, in the case of the Gentoo as well as of the Adelie, that the same birds come back to the same rookery year after year.

"When the expedition arrived at Petermann's Island in February, 1909, I put on the right leg of several Penguins (young and old) some celluloid rings of various colours, according to the age of the birds. In October and November, 1909, on the return of the birds to their rookeries, I had the good fortune to recover a score of adults marked by me nine months before. I did not, however, recover any of the young, which seems to indicate that they do not return to their birthplace and do not mate until two years old.

"Since the return of the expedition to France I have learned that in November and December, 1910, some ringed birds had been recovered by whalers who, during the summer months, went in search of cetaceans in those regions.

"The Adelie Penguin is a brave animal, and rarely flees from danger. If it happen to be tormented it faces its aggressor and ruffles the black feathers which cover its neck. Then it takes a stand for combat, the body straight, the animal erect, the beak in the air, the wings extended, not losing sight of its enemy. It then makes a sort of purring, a muffled grumbling, to prove that it is not satisfied and has not lost a bit of its firm resolution to defend itself. In this guarded position it awaits events. If the enemy beat a retreat, then the Penguin abandons its menacing attitude; often it stays on the spot; sometimes it returns, and,

lying flat on the ground, pushes itself along with all the force of its claws and its wings. Should it be overtaken, instead of trying to increase its speed it stops, backs up again to face anew the peril, and returns to its position of combat. Sometimes it takes the offensive, throws itself on its aggressor, which it punishes with blows of its beak and wings.

"With the opening of spring, the Adelies return little by little toward their old rookeries. As soon as they arrive many make their bed on the snow as if to rest from the fatigue of their long journey; those more rested or less indolent hunt for pebbles needed for building their nests.

"The life of the city becomes more and more active; the birds are each day more numerous. The smallest rock uncovered is at once occupied. Small stones become scarcer and scarcer, and it is difficult for new arrivals to procure them; thereupon the last comers resort to stratagem in order to steal from neighbouring nests.

"The quarrels over ownership increase; each works for itself; selfishness rules as master; everywhere is distrust.

"One suspects its neighbour, which, when it approaches, suspects it; if it tries, in spite of the cries and menaces, to come nearer, it is received with blows of the beak; if it tries to steal a pebble and is detected, it is pursued and severely punished. At every moment some quarrels, some battles, burst out. Often a dispute between two individuals, degenerating into a fight, ends by spreading the trouble into every corner of the city. The Adelie is a savage individual, constantly in conflict to defend its property.

"When the Penguins come to their rookeries the male begins to search for a female, with whom it will stay until the young are able to take care of themselves. At this time the male is full of animation before the female, and carries on a very ardent courtship. Sometimes two males having the same tastes court the same female. There is then seen a rivalry in gallantry; the female, surrounded by two suitors who attack, probably with pretty words, dares not decide too quickly. She is intimidated, and these attacks of gallantry are generally ended by a regular battle between the suitors; but we cannot say with certainty whether the victor in the contest inevitably becomes the husband of the lady Adelie.

"What confusion in these cities of the Adelie! How many quarrels over stolen pebbles and property rights! How many battles, too, started by jealous husbands! And all this occurs on ground wet with melting snow, stained with mud the colour of wine dregs.

"The Adelies lay two, very rarely three, eggs. They are slightly greenish-white; their weight varies between 125 and 135 grams. The laying begins in the first days of November and ends by the last of December. Male and female alternately sit on the nest.

"The female takes great care of the eggs; several times during the day she turns them with her beak, then she rests on them so as to bring in contact with the shell the region of the abdomen which, on a longitudinal median surface, is destitute of feathers. The lower part of the eggs rests on the feet of the bird.

"Incubation lasts from 33 to 36 days.

"The first broods hatch in the latter half of December. On hatching they are covered with a uniformly blackish-grey down, darker on the head, which they keep for seven or eight weeks.

"After the hatching of the eggs, which ends in the first half of January, the city presents great animation. The parents must assume the difficult task of nourishing the broods, which are rapidly developing. Also, when the hatching is over, the male and female in turn abandon the nest to go a-fishing.

"One then sees the Adelie quit the rookery in little flocks, which always follow the same route, and in fleeing make veritable paths in the snow to reach some point on the coast where it will be easy to launch out to sea.

"The Penguins remain in the sea only long enough for the fishing. There, in fact, they encounter their formidable enemies, the killers and the seals. The heron seal (*Lobodon carcinophagus*), the Weddell seal (*Leptomychotes weddelli*), and especially the fierce sea leopard (*Hydrurga leptonyx*), take for their nourishment an ample supply of Penguins.

"The fishing ended, always in companies, the birds return to the rookery, where they are impatiently awaited by their offspring.

"With its great belly, which reaches to its feet, the young bird has a very clumsy appearance. Sometimes completely satiated, it remains in place without being able to stir; at other times, moved by hunger, it runs after some adult returning from the sea; it harasses that unfortunate until it finally yields. Through a sort of regurgitation, the bird causes part of the food to return into the throat, where the young glutton, burying its head almost entirely in the beak of the adult, searches for it.

"In general, the broods abandon the nests a few at a time. The young now keep together in small groups, moving about, splashing in the midst of the reddish mud, with which they are covered from head to foot. The very disagreeable odour which comes from them leaves some doubt as to the good hygiene of these animals. Each group is confided to the care of some adults, which carefully watch over all these noisy and already inquisitive young creatures. One side of the rookery ends in a cliff overhanging the sea or a ravine, some adults standing there as sentinels. Woe to the curious little one that ventures too near the dangerous spot; the watchman, with a light stroke of the beak or of the wing, reminds the rash bird of the duty of obedience and of the need of returning to the ranks.

"In February the young, little by little, change the down for the plumage which they wear for a year or until the next moult. They are now distinguished from the adults by the absence of the

white iris, also by the colour of the throat, which is white instead of black, the line of white and black crossing the cheek below the eye. It is not until the next moulting, at the end of a year, in February or March, that they take on the plumage of the adult. At the end of February the young can care for themselves; they leave the rookeries and ramble in groups along the coast. From day to day their number diminishes. They leave in March, going northward to dwell on the open sea.

"The parents have done their work. Having laboured for their offspring during four months, they must now think of themselves. Winter approaches; they must form the new habit which will enable them to endure bad weather. They go to rest on the snow or in some crevice of the rocks, sheltered from the prevailing winds. They remain there in the same place, without moving, during the entire moulting season—that is to say, for 20 days. They are compelled to live on their reserve fat. They become unsightly, resembling birds poorly stuffed, eaten by insects.

"At the end of March, when the moulting is over, the birds in small flocks gradually leave their city, to which they will again return at the close of winter, after seven months' absence.

"Finally, the last species, which, like the Adelie, is distributed over the whole extent of the Antarctic continent, is the Emperor Penguin (*Aptenodytes forsteri*), a bird of large size, sometimes reaching a height of 1 meter 10 centimeters and a weight of 40 kilograms. It is a very beautiful bird; its head is jet black; on each side of the head a band of golden-yellow diminishes gradually toward the neck and ventral regions; the back is bluish-grey, the beak to the base of the mandibles purplish-rose. The Emperor does not leave the polar regions, where the birds are found in small groups on the icebergs. If two groups happen to meet, the leaders bow to each other, lowering their beaks on their breasts; remaining in this position, they hold a long discourse; then, compliments having been exchanged, they raise their heads and describe a great circle with their beaks. They act in the same way toward men, who generally have great difficulty in understanding this mimicry, obliging the Penguin to begin over again.

"The habits of this Penguin are very different from those of the birds that we have just considered. The mode of reproduction is very peculiar, and has been ably studied by Mr. Wilson, naturalist of the *Discovery* Expedition. It occurs in the dead of winter, in the middle of the polar night, at the end of June, in cold that may reach 50° C. below zero, when the Emperors gather together near the continent, on a solid iceberg, to lay a single egg. There are no preparations, no nest.

"To keep the egg off the ice, the Penguin places it on his feet, held between his legs, protected by a fold of skin covered with feathers at the base of the abdomen. As the incubation lasts nearly two months, the birds, of which not many are engaged in brooding, pass the egg to one another in turn. At the beginning

of September the young is hatched. As there is only one chick to ten or so adults, and as every one of the latter wishes to brood, there is much jostling and struggling to get possession of the little one, that brings upon the poor creature unintentional wounds, sometimes causing its death.

"Toward the end of October migration toward the north takes place, the birds letting themselves be carried off on fragments of ice broken from the iceberg; the chicks, still covered with down, are carried by their parents. In January they lose this down, and from this time on they provide for themselves.

"While the young live on the outskirts of the icebergs the adults return south to seek solid ice, on which they go to moult, then in the month of June they come together again, and the cycle that we have just briefly described begins anew."

The article was illustrated by numerous excellent photo.-blocks.

Reviews.

["Indian Pigeons and Doves." By E. C. Stuart Baker, F.Z.S., F.L.S., M.B.O.U. Witherby and Company, London. 1913.]

THIS finely-illustrated volume should prove a boon to field ornithologists in India, and both author and publishers are to be congratulated on its production. In his preface the author states:—

"My reasons for writing a volume upon our Indian Pigeons and Doves are several. . . . In the first place, there has as yet been no book published which deals with these most beautiful birds from the point of view of the sportsman and field naturalist as well as from that of the scientific or museum naturalist. . . . Skins—as skins—are without doubt full of interest, and especially so, perhaps, when the person studying them is more or less intimate with the life-histories of the birds themselves; but Pigeons are well worthy of study in ways other than by dry skins. To the field naturalist they are birds full of interest; to the aviculturalist they are birds more charming and worthy of culture than has hitherto been generally admitted; and to the sportsman they offer an object well worthy of attention, for he must have a quick eye, a sure hand, and considerable perseverance and patience before he has mastered their habits, and is able to find them, and, when found, bring them to bag."

Many ornithologists will agree with most of these statements; but one may be permitted to wonder wherein lies the pleasure of shooting, for sport, birds that are so beautiful and interesting. A bird in the bush is worth a score in the game-bag, in the opinion of those who are true bird-lovers.

A feature of this book is that it introduces for the first time into India the trinomial system—the system that recognizes sub-species. But India, the author states, is essentially a country in which such a system is found necessary, "for the variations

in climate are so great, according to elevation, humidity, &c., that the same species in different localities are bound to undergo some degree of evolution, which shall render them suitable to their surroundings." He accepts geographical variations "as sufficient reason for the creation of sub-species as long as they are constant within a given area, though intermediate areas may be inhabited by intermediate forms."

The coloured plates, from drawings by H. Grönvold and G. E. Lodge, deserve the highest praise. They are a delight to the eyes. The printing and binding of the volume are also excellent. If such a work on Australian Pigeons and Doves could be produced at a reasonable cost it would be warmly welcomed by members of the R.A.O.U.

[*"Colour Standards and Colour Nomenclature."* By Robert Ridgway, M.S., C.M.Z.S., &c., Curator of the Division of Birds, United States National Museum. With fifty-three coloured plates and eleven hundred and fifteen named colours. Washington, D.C., 1912. Published by the author.]

THE author, who is an honorary member of the R.A.O.U., has kindly sent for its library a copy of this useful book, with the following note:—"A year or so ago I promised to send you, when the book was published, a copy of my '*Colour Standards and Colour Nomenclature*' for review in *The Emu*; but my time has been so fully occupied, chiefly by the preparation of part vi. of '*Birds of North and Middle America*,' that many things have necessarily been deferred. . . . As information for your readers, I will state that the sole agents for the sale of the book in Europe and the British Colonies are William Wesley and Son, 28 Essex-street, Strand, London, W.C., and that the price is £1 15s."

Professor Ridgway's gift is very acceptable and easily acknowledged, but to criticise it is another matter. The critic may well say it is above criticism. The fifty-three plates are a technical triumph. Each has gradations of tints or shades shown by 21 small oblong shields of colour on a pale neutral grey mottled background. One has to be possessed of a very discriminating eye to separate the colours. Take, for instance, "mouse-grey." On the light side there are "light mouse-grey," "pale mouse-grey," and "pallid mouse-grey," while on the dark side there are "deep mouse-grey," "dark mouse-grey," and "blackish mouse-grey." And so on for over one thousand different colourations.

The standardization of colours and colour names is of great assistance to ornithologists in describing birds and eggs, and a tremendous incentive to the trinomialist to multiply sub-species on the slightest variation of shade or tint of colour.

The highly technical introduction must be of fascinating interest to students of chromatology and colour physicists. One often hears mentioned "complementary colours." Defined by the professor it means:—"As white light is the sum of all colour,

if we take from white light a given colour the remaining colour is the complement of the given colour.' When any two colours or hues which when combined in proper proportion on the colour-wheel produce, by rotation, neutral grey, these two colours each represent the complementary of the other."

Now that wattle-blossom has been proclaimed Australia's national flower, Australians especially will be interested and instructed in a number of new names in the scale of yellows, such as baryta, martius, pinard, picric, massicot, naphthalene, chalcidony, marguerite, chartreuse, &c. King's yellow is missed, but instead there is an "empire yellow," of similar tint.

Correspondence.

NORTH QUEENSLAND BIRDS.

The Editors of The Emu.

SIRS,—Dr. W. Macgillivray, in his most interesting paper on the birds of Northern Queensland, in *The Emu*, January, 1914, remarks that it is doubtful whether the nest and eggs of *Podargus marmoratus* have been obtained. I wish to state that I described the nest and egg in *The Ibis* for July, 1899 (page 361). Dr. Macgillivray also mentions that the eggs of a Cuckoo were found in the nest of *Glyciophila modesta*, and he presumes that they were those of *Cacomantis variolosus*. He is right in his contention, as in 1898 I left an egg of the Cuckoo in the nest of foster-parents until it was hatched and the fledgeling was able to leave the nest. I then secured the specimen and brought it to Melbourne. It proved to be the young of the above-mentioned species.

Zoological Gardens, Melbourne.

D. LE SOUËF.

About Members.

DR. George Horne, member of Council, R.A.O.U., is enjoying a well-earned holiday in Europe.

MR. Robert Hall, C.M.Z.S., late president R.A.O.U., is now an orchardist in the Hobart district, Tasmania, and intends to pursue ornithology as a recreation only.

MR. Tom Carter, M.B.O.U., has left Western Australia and returned to England. His temporary address is c/o Dr. M. C. Ward, Marshall's-road, Sutton, Surrey.

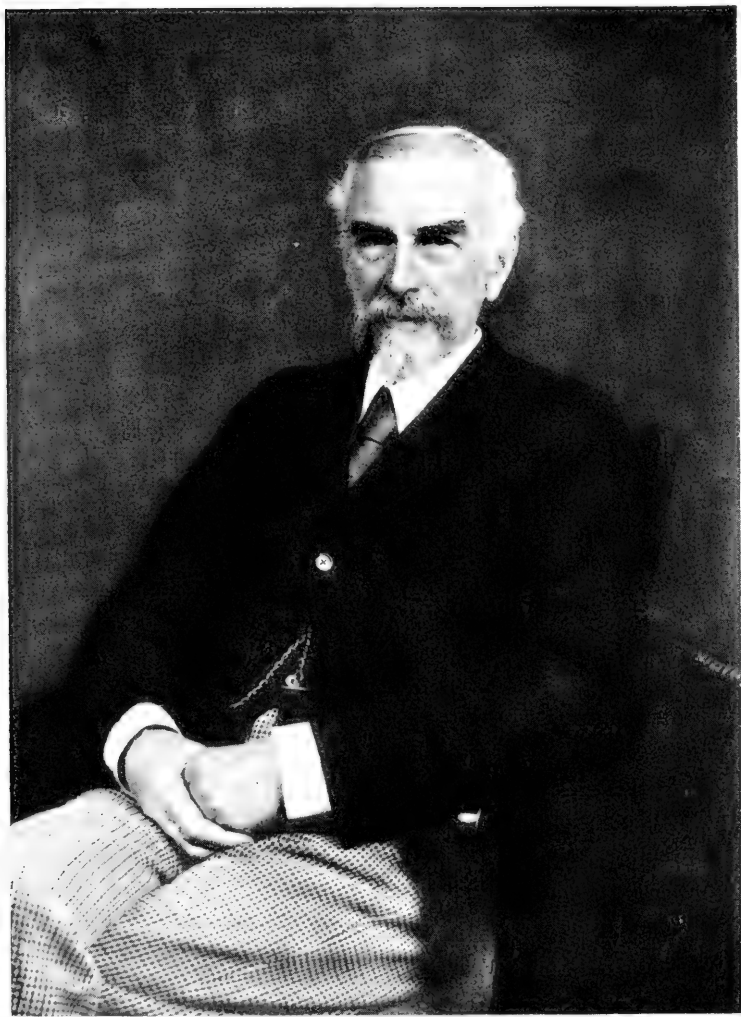
MR. Gregory M. Mathews, F.R.S. (Edin.), is on a visit to the Commonwealth in connection with the publication of his great work, "The Birds of Australia." He touched at Perth, and was warmly welcomed at Adelaide by the South Australian ornithologists. He was entertained at Melbourne by the Council of the R.A.O.U. and the Bird Observers' Club respectively. Mr.

Mathews is at present in Tasmania. From there he will proceed to New South Wales and Queensland before returning to Britain, *via* America, in July. Mr. Mathews was accompanied to Australia by Mrs. Mathews and their sons, who remained on the mail steamer until Sydney was reached.

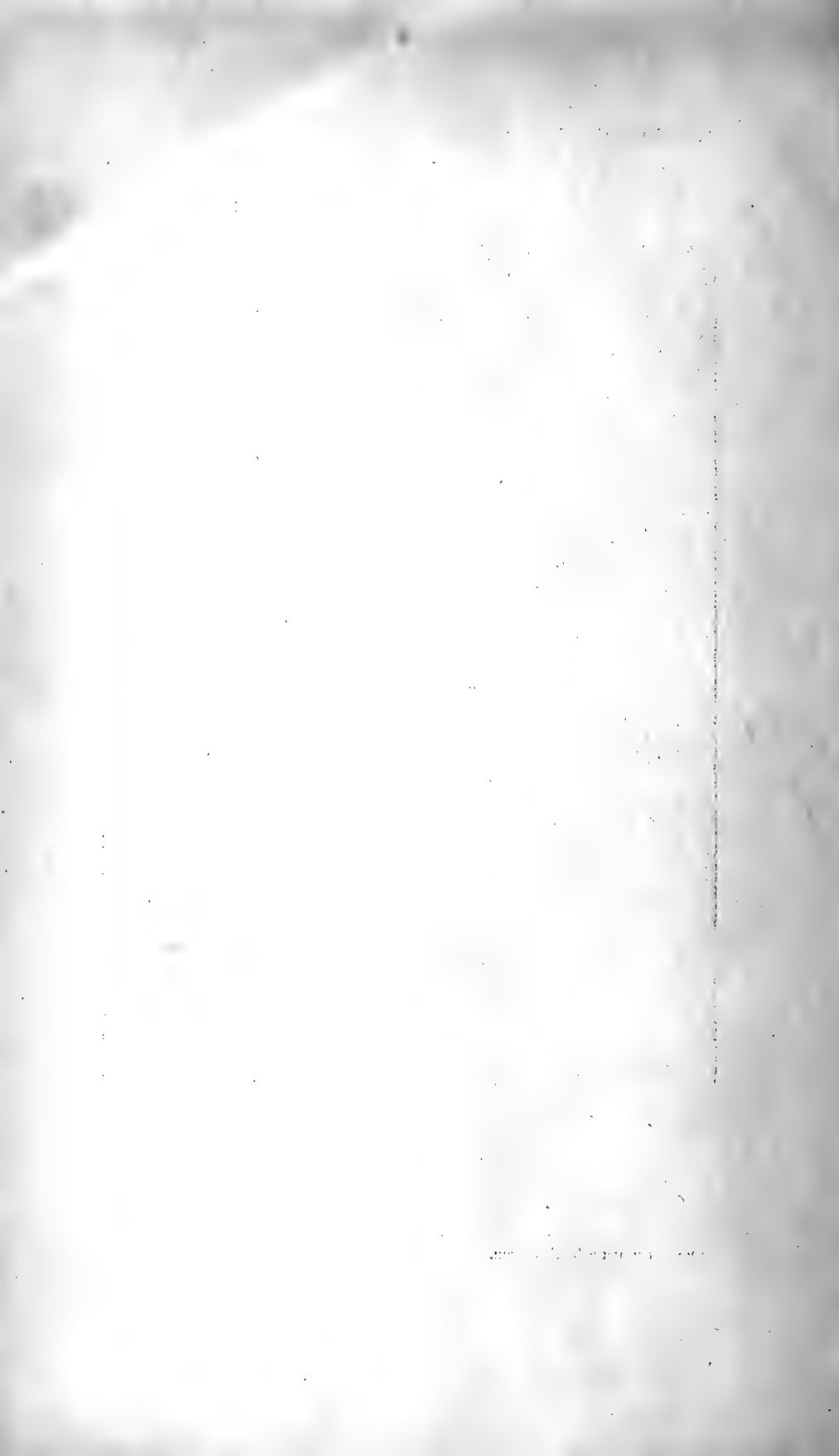
DR. R. W. SHUFELDT, of Washington, D.C., an honorary member of the R.A.O.U., hopes, with Mrs. Shufeldt, to visit Australia during the meeting of the British Association for the Advancement of Science. Dr. Shufeldt has a world-wide fame as an author and ornithologist. He was collaborator with the late Professor Alfred Newton in the "Dictionary of Birds." He is an unwearied and versatile writer in many branches of ornithology. In addition to the valuable articles on osteology which he contributed to *The Emu* last year, he has written in *Science* (N.S., vol. xxxvii., No. 947) on "New and Extinct Birds and Other Species from the Pleistocene of Oregon," and a highly technical paper, "On the Patella in the Phalacrocoracidae," which appeared in the *Proceedings of the Zoological Society of London*. On the more popular side of ornithology Dr. Shufeldt contributed to the *Popular Science Monthly* for November, 1913, an article on "The National Zoological Garden." In the *Outers' Book* he continues his pleasantly written articles (illustrated) on "American Grouse and their Identification," and in that charming publication, "The Guide to Nature," he has written, with illustrations, on "Some American Wild Fowl," &c., while *The Auk*, vol. xxx., No. 2, p. 318, contains a sympathetic obituary notice of Professor Robert Collett, of Christiania, from the pen of the talented doctor.

Obituary Notice.

The Ibis for October, 1913, contains a memoir of the late Philip Lutley Sclater, D.Sc., F.R.S., by Mr. A. H. Evans. "Not only was he of world-wide reputation for a long life's work," states the writer, "but the various posts which he held at different periods entitled him to be considered of late the head of that branch of learning to which he was specially devoted, as well as a great power in zoology generally. He always had the welfare of ornithology at heart, and was not only ready but anxious to further any project for its advancement, while his kindness and consideration to all beginners who applied to him were equally characteristic. The names of Bowdler Sharpe, Garrod, and W. A. Forbes will at once occur to us in this connection, but these are a mere drop in the ocean compared to the long list of all who have owed their position or their reputation to his support, and those of them who are still alive will have heard with the keenest regret of his removal from our midst. It may, perhaps, be permitted to the present writer here to strike a personal note by expressing his own feeling of gratitude for all Dr. Sclater's kindness towards him, both in early life and while joint-editor with him of *The Ibis*,



D. L. Sclater



and to add his tribute to the memory of a great ornithologist and a warm and consistent friend. As an original member of our Union, as editor of our journal, and as chairman of the British Ornithologists' Club, Dr. Sclater was connected with all of us by the closest of ties, and thus this notice must be considered as an expression of the greatest regret and at the same time a token of the greatest esteem put forward in the name of every member of the B.O.U.

"The subject of our notice was born on the 4th of November, 1829, at Tangier Park, in Hampshire, then the residence of his father, Mr. William Lutley Sclater, J.P.; but his boyhood was passed at Hoddington House, another estate in the same county, also belonging to his father, to which the family moved in the month of September, 1833.

"In beautiful Hampshire, not far from the old home of Gilbert White, Sclater acquired, at an early age, a love for outdoor life and exercise and a special taste for the study of birds. At the age of ten he was sent to a well-known school at Twyford, near Winchester; in 1842 he left for Winchester College, and in 1845 was elected Scholar of Corpus Christi College, Oxford. Being at that time under sixteen years of age, he was not called into residence until Easter, 1846. At the University his attention was given principally to mathematics, though his spare time was occupied by the study of birds, and of the excellent series of natural history books then in the Radcliffe Library.

"Hugh E. Strickland, the well-known ornithologist, who was at that time resident in Oxford as Reader in Geology, became interested in young Sclater, and it was at his house that he met John Gould, shortly after his return from his great journey to Australia. From Strickland he received his first instruction in scientific ornithology. He began his collection of bird-skins at Oxford, making British skins for himself, and buying foreign specimens whenever he had the opportunity.

"In December, 1849, he took the degree of Bachelor of Arts, obtaining a first class in the mathematical school and a 'pass' in classics. At that time these were the only two recognized subjects for study in the University, no sort of encouragement being given to natural science. After taking his degree Sclater remained in Oxford for two years, devoting his time principally to natural history. He also gave much attention to modern languages, studying them with masters at home and always visiting the Continent in vacation-time, and thus soon made himself familiar with French, German, and Italian.

"At this period of his life he was often in Paris, studying at the National Museum in the Jardin des Plantes. Here he made the acquaintance of the great ornithologist, Prince Charles Bonaparte, at whose house, in the Rue de Lille, he was a frequent visitor. In 1851 he entered as a student at Lincoln's Inn, while the winter of 1852-53 was devoted to travel in Italy and Sicily.

"In December, 1855, Sclater was admitted Fellow of his college,

and, having in the previous June been called to the Bar, went on the Western Circuit for several years.

"In 1856 he made his first journey across the Atlantic, in company with the Rev. George Hext, a fellow Oxonian. Leaving England in July, they went by New York up the Hudson to Saratoga, and there attended the meeting of the American Association for the Advancement of Science. After that they went to Niagara, and thence through the Great Lakes to Superior City, at the extreme end of Lake Superior. Here they engaged two Canadian 'voyageurs,' and travelled on foot through the backwoods to the upper waters of the St. Croix River. This they descended in a birch-bark canoe to the Mississippi. Sclater subsequently published an account of this journey in the third volume of 'Illustrated Travels.' Returning by steamboat and railway to Philadelphia, he spent a month studying the splendid collection of birds belonging to the Academy of Natural Sciences in that city, where he formed the acquaintance of John Cassin, Joseph Leidy, John Le Conte, and other then well-known members of that Society. He returned to England shortly before Christmas, 1856. For some years after this he lived in London, practising at the Bar, but always working steadily at natural history. He was a constant attendant at the meetings of the Zoological Society of London, of which he was elected a Fellow in 1850, and in 1857 became a Member of the Council. In 1858 he took a prominent share in founding *The Ibis*, and became its first editor.

"In January, 1859, Sclater made a short excursion to Tunis and Eastern Algeria, in company with his friend, E. C. Taylor. They visited the breeding-places of the Vultures and Kites in the interior, and gathered many bird-skins, returning to London at the end of March.

"At this time Mr. D. W. Mitchell, secretary of the Zoological Society, was about to vacate his post, in order to take charge of the newly-instituted Jardin d'Acclimatisation in Paris. As his successor Sclater was selected by Owen and Yarrell, then influential members of the Council, and was unanimously elected at the anniversary meeting on 30th April, 1859.

"He found it necessary for several years to devote himself entirely to the reorganization of the affairs of the Society. The *Proceedings* and *Transactions* were at that time several years in arrear—they were brought up to date; the 'Garden Guide,' which was out of print, was re-written; the large staff at the Gardens was re-arranged and divided into departments under the superintendent, and various other reforms were introduced.

"In 1874, when his brother (then the Right Hon. George Sclater-Booth, M.P., and afterwards Lord Basing) accepted office in Mr. Disraeli's administration as President of the Local Government Board, Sclater became his private secretary, a position which he occupied for two years. But when subsequently offered a permanent place in the Civil Service he declined it, because he could not make up his mind to give up his dearly-loved work in

natural history. His most engrossing duties were in connection with the Zoological Society of London, to which, as principal executive officer, he, of course, devoted most of his time. It is conceded by all that its affairs prospered well under his direction. The number of Fellows of the Society, about 1,700 in 1859, increased to over 3,000. The income of the Society, which in 1858 was a little over £14,000, rose to £30,000. Besides this, nearly all of the principal buildings in the Society's Gardens were rebuilt and fitted up with every sort of modern convenience for animals. The old office building (No. 11 Hanover-square) was sold, and was replaced by a much larger and more convenient house (No. 3 Hanover-square) in the same vicinity. A debt of £12,000 was paid off, and the house became the freehold property of the Society without any sort of encumbrance. The first floor of the Society's house was devoted to the accommodation of a large and very valuable zoological library, under the care of a librarian and his assistant, and was the constant resort of the working zoologists of the metropolis. This library had been almost entirely accumulated since 1859. Sclater was also instrumental in the adoption of that important work, 'The Zoological Record,' by the Society.

"Sclater, as already mentioned, was selected by the British Ornithologists' Union as the first editor of its journal, *The Ibis*, in 1859. He finished the first series in 1864. Professor Newton took his place as editor of the second series, and Osbert Salvin as editor of the third. In 1877 Sclater was associated with Salvin as editor of the fourth series, and in 1883 commenced the editorship of the fifth series, with Howard Saunders as co-editor. When the fifth series was completed, in 1888, he became sole editor of the sixth, which he finished in 1894. In 1895, having again obtained the assistance of Howard Saunders, he commenced work on the seventh series, and finished it in 1900. Taking A. H. Evans as co-editor, he completed the eighth series in 1906, and the ninth series in 1912.

"When the British Ornithologists' Club was established, in 1892, he joined heartily in the movement inaugurated by Dr. R. Bowdler Sharpe, and was elected chairman. He was most regular in his attendance at the monthly meetings, occupying the chair and delivering an inaugural address at the commencement of each session.

"With the British Association for the Advancement of Science Sclater had a long connection, having become a member in 1847, at the second Oxford meeting, and having attended its meetings, with few exceptions, for many years. For several years he was secretary of Section D, and at the Bristol meeting, in 1875, he was president of that section, and delivered an address, 'On the Present State of our Knowledge of Geographical Zoology.' In 1876 he was elected one of the two general secretaries of the Association, together with Sir Douglas Galton, and served in that capacity for five years, thereby becoming an *ex officio* member

of the Council, at the meetings of which he continued to be a constant attendant.

"In 1886 Sclater began the transfer of his private collection of American bird-skins to the British Museum. This collection contained 8,824 specimens, representing 3,158 species, belonging to the Orders Passeres, Picariæ, and Psittaci. It may be remarked that when he began his collection at Oxford in 1847 he intended to collect birds of every kind and from all parts of the world, but after a few years he resolved to confine his attention particularly to the ornithology of South and Central America, and to collect specimens only in the Orders above mentioned, which were at that time generally less known than the others, and of which the specimens are of a more manageable size for the private collector.

"At the time of the beginning of this transfer, which was only completed in 1890, Sclater agreed to prepare some of the volumes of the British Museum 'Catalogue of Birds,' relating to the groups to which he had paid special attention. In accordance with this arrangement, by the expenditure of fully two years of his leisure time on each volume, he prepared the eleventh volume in 1886, the fourteenth in 1888, the fifteenth in 1890, and half of the nineteenth in 1891.

"When the *Challenger* Expedition started to go round the world in 1873, at the request of his friend, the late Sir Wyville Thomson, he agreed to work out all the birds. Soon after the return of the expedition, in 1877, the specimens collected were placed in his hands, and, with the assistance of his ornithological friends, were speedily reported upon in a series of papers contributed to the Zoological Society's *Proceedings*. The whole of these papers were reprinted, with additions and illustrations, and now form part of the second volume of the 'Zoology' of the *Challenger* Expedition.

"Geography, being very closely connected with zoology, always commanded Sclater's hearty interest. He became a life member of the Royal Geographical Society in 1880, and attended its meetings very regularly. He also served two years on the Council, and was a member of the Geographical Club. He assisted in promoting many researches in foreign parts, chiefly, however, with a view to obtaining collections in natural history from strange places. Among these may be especially mentioned Sir H. H. Johnston's expedition to Kilima-njaro in 1884 and Professor Bayley Balfour's visit to Socotra in 1880. He also took a leading part in sending out naturalists to Kerguelen Land and Rodriguez with the Transit-of-Venus Expeditions of 1874-75, and in many other similar efforts to explore little-known parts of the earth's surface.

"In fact, his work on Geographical Distribution and Classification may be considered his greatest claim to the gratitude of posterity. Of the former subject he set forth his views soon after 1858, when he suggested for the acceptance of ornithologists his six well-

known geographical regions, while later he wrote, jointly with his son William, on the geographical distribution of mammals. With regard to the latter subject, he propounded a Classification of the Class Aves in *The Ibis* for 1880.

"In 1884 he took advantage of the opportunity of the visit of the British Association to Montreal to cross the Atlantic a second time, and after the meeting to again visit the United States. He was not in good health at that period, and did little, if anything, in the way of zoology. But he had the pleasure of seeing several of his former friends, especially Messrs. Lawrence and Baird, and of making the personal acquaintance of Mr. Ridgway, Mr. Allen, Mr. Brewster, Dr. Merriam, and many other naturalists.

"Sclater's death took place, as the result of a carriage accident, on 27th June, 1913, at the age of 83 years. He leaves a widow, three sons, and a daughter."

Notes and Notices.

Hon. Treasurer's Note.—Members whose subscriptions for the current year are still outstanding are kindly requested to *forward them at once*, so that the year's accounts may be satisfactorily closed. Address: Z. Gray, 190 Bridport-street, South Melbourne.

Editorial Change.—After thirteen years as honorary ornithological editor of *The Emu*, Mr. A. J. Campbell retires from office—temporarily, at least. Dr. J. A. Leach has consented to become associated with Mr. Charles Barrett in the editorship. All articles for publication, parcels, &c., for the journal should be addressed: "Editors, *The Emu*, c/o Zoological Gardens, Melbourne."

Important.—The Council R.A.O.U. hopes to arrange the annual session earlier this year, so as to coincide with the Melbourne meeting of the British Association for the Advancement of Science, which takes place during August, while it is proposed to hold the working camp-out at Mallacoota Inlet. Such arrangements, it is thought, will give Australian ornithologists an opportunity of meeting more closely with any ornithologists from abroad.

Birds and Sheep-Flies.—The Department of Agriculture, New South Wales, is conducting some experiments with a view of ascertaining the best method of destroying the sheep maggot fly pest. Some birds are supposed to destroy the flies, and it is proposed to carry out an examination of such species. It is asked that members of the Union should examine the contents of the stomachs of birds shot, and advise the Department as to the results.

Hon. Associate Members.—In *The Emu*, ante, page 109, it is stated that Capt. S. A. White (S.A.) and Mr. H. L. White (N.S.W.) were elected "honorary members." Obviously, it

should be "honorary associate members." The rule (3) regulating such elections reads:—"Honorary members shall be prominent ornithologists residing out of Australia. Honorary associate members shall be prominent ornithologists residing in Australia or New Zealand. Honorary and honorary associate members shall not together exceed ten in number."

Mathews' Latest List.—Mr. Gregory M. Mathews has brought to Australia this, his last and most important list, and has been good enough to present the Union with a copy. It is a large publication, between 400 and 500 pages, containing the names and synonyms connected with the genera, species, and subspecies of birds found in Australia at present known to the author, together with an introduction of much historical interest, as well as with highly critical and argumentative matter. As the volume was received when this issue was going to press, an extended review of Mr. Mathews's latest list will appear in the next (July) *Emu*.

A W.A. Session.—In all probability the proposed visit of the R.A.O.U. to Western Australia will take place next year.

In reference to a desirable locality for original field-work, Mr. Tom Carter writes:—"Referring to the proposed expedition of the R.A.O.U. last year to the islands of the Recherche Archipelago, in the Australian Bight, I have just had a conversation with Captain Airey, of the Government s.s. *Penguin*, on his return from a search through the abovementioned islands for the missing dredge *Posidonia*. He informs me that landing, or even anchoring near the islands, is most uncertain, and in many cases dangerous, if not impracticable, even in calm weather, owing to the heavy swell constantly rolling in. This information might be useful in case an expedition there is planned in the future. Of course, several of the islands have been landed upon by Mr. Tunney and others at various times, but apparently this landing is very largely dependent upon the weather. Captain Airey states that the only passable landing is between Middle Island and Goose Island."

Keeping Native Game.—An important point was determined recently by Mr. Justice Hodges in the Practice Court as affecting the right of a person to be possessed of native game in the close season. Last September Speros Lucas, café proprietor, of Elizabeth-street, Melbourne, was charged, on the information of Charles Moore Cliff, "that on 25th August he knowingly had in his possession certain native game—16 Wild Ducks—within the period of the year when the season for such game was closed." The defence was that the Ducks had been purchased when the season was open, and had since been kept in freezing chambers. The magistrates dismissed the case, and the Crown obtained an order to review the decision. Mr. Justice Hodges said that the Crown took the view that the moment after the period of 10 days from the close season no game could be sold, while the defendant,

in turn, contended that he was entitled to retain possession of game. The Act gave a person a right to remain in possession of game, but it was to be subject to certain restrictions if imposed. If the Act provided that a person could not take delivery of game until certain restrictions were imposed by the Governor in Council, then, if no conditions or restrictions were imposed, he would not be able to take delivery of the game at all. The person already had the game, and if no restrictions were imposed as to the mode of keeping the game, he could continue to remain in unrestricted possession of it. The order *nisi* was discharged, and the decision of the justices was upheld.—Melbourne *Argus*.

Publications Received.

Annual Report Field Museum of Natural History, 1913.

Annual Report Smithsonian Institute, 1910 and 1911.

Annual Report U.S. National Museum.

Auk, The, Vol. XXIX., part 4; Vol. XXX., parts 2, 3, 4; Vol. XXXI., part 1.

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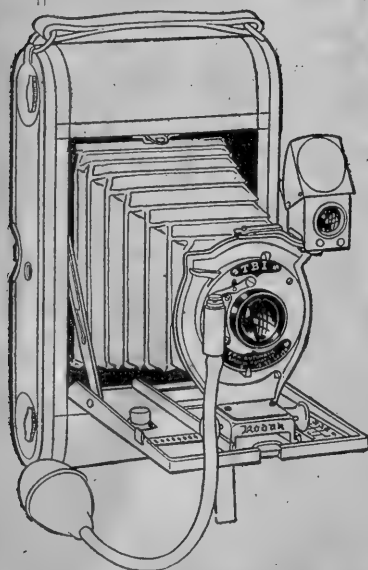
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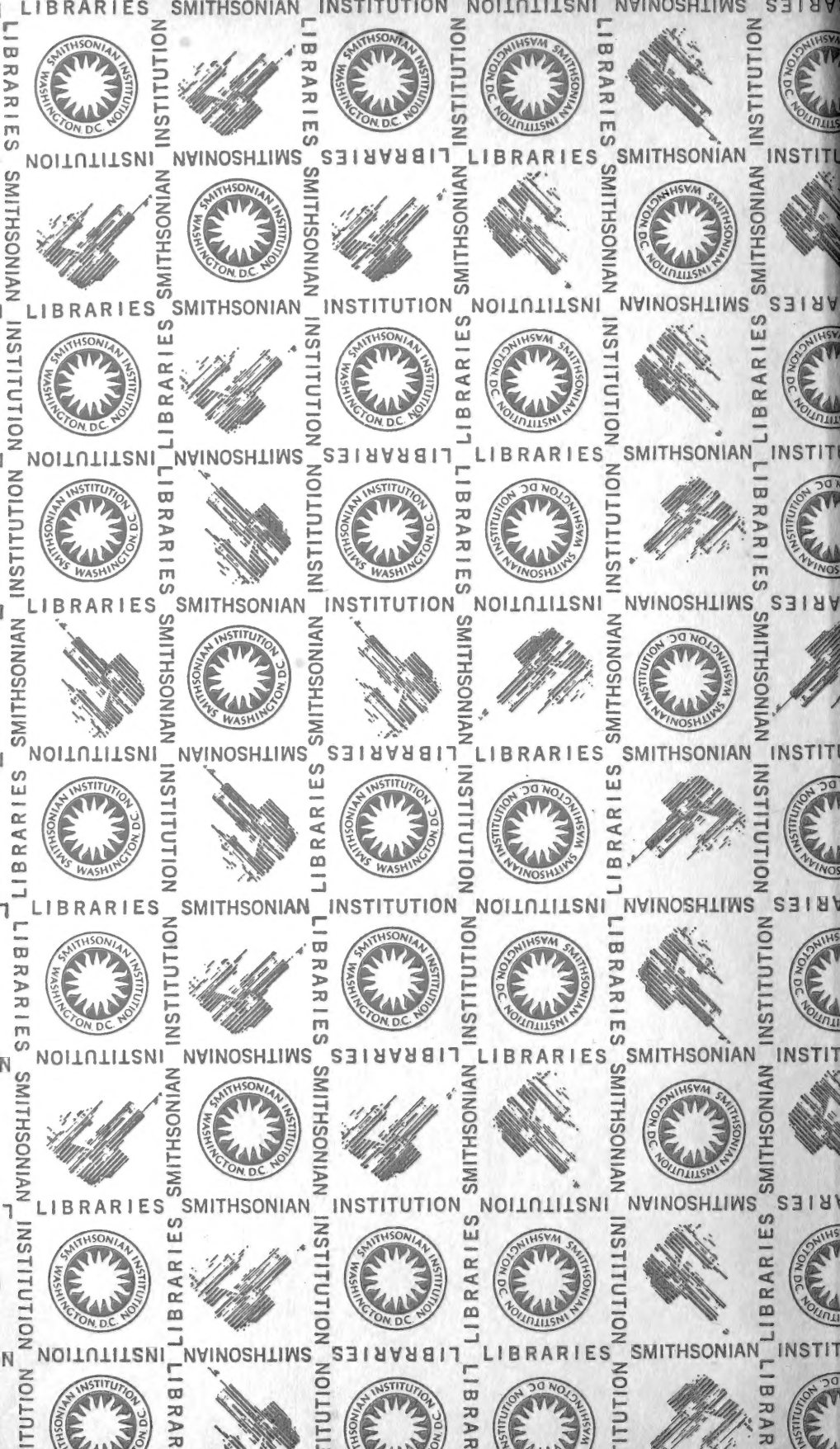
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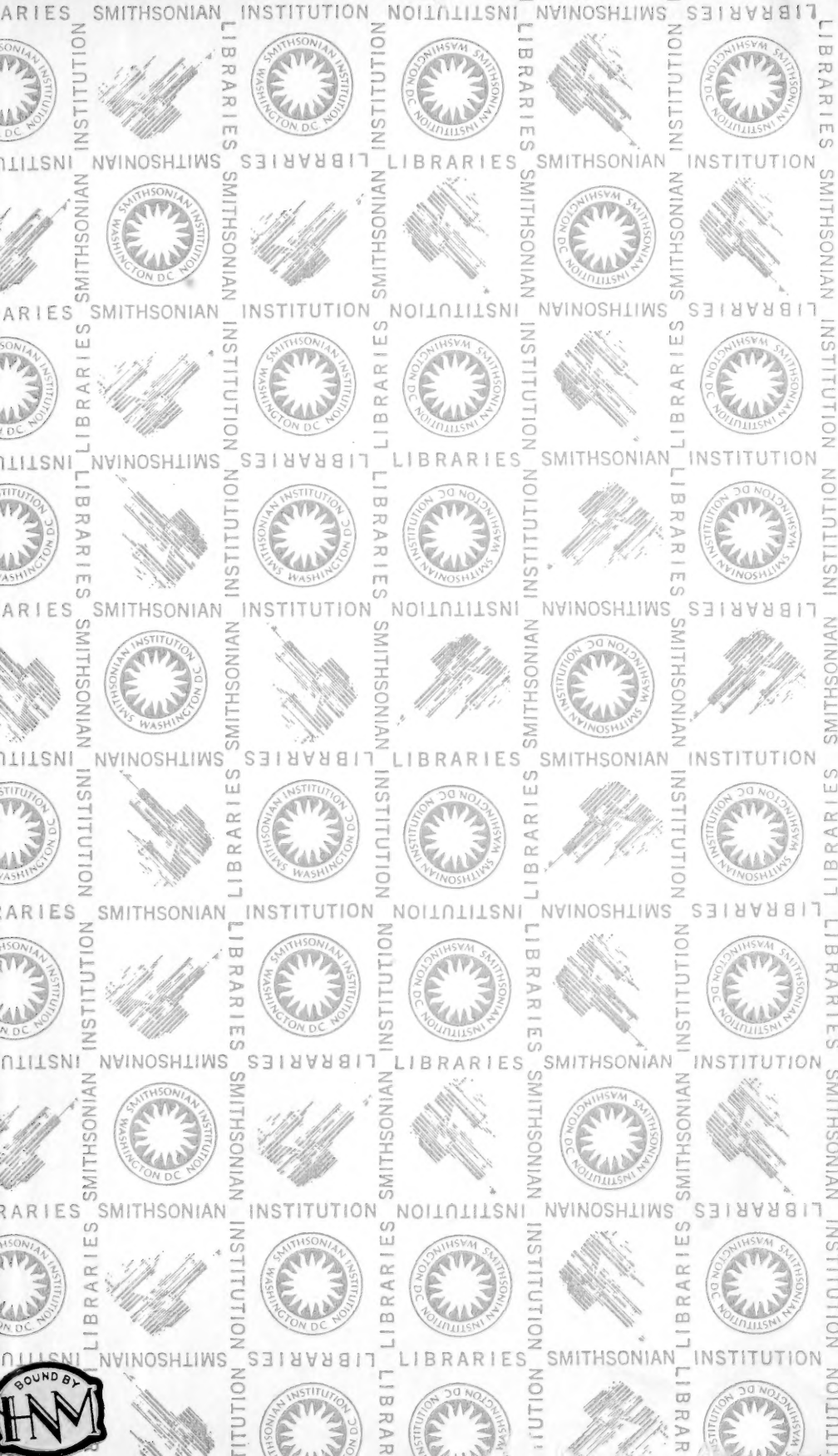


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